Vol. 1029 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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April 12, 1983

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

April 12, 1983 Volume 1029 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

Dec. 3, 1982.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,297,422, Re. S.N. 378,157, Filed Mar. 14, 1982, Cl. 65/38, METHOD OF MAKING MOLDS FOR MULTI-FOCAL OPTHALMIC LENSES, Stanley S. Emerson, et al., Owner of Record: *Camelot Industries, Burlington, Me.,* Attorney or Agent: Leo R. Reynolds, et al., Ex. Gp.: 173

3,667,170, Re. S.N. 378,462, Filed May 14, 1982, Cl. 51/389, FINISHING ARTICLE AND SUPPORT MEMBER THEREFOR, Joseph H. MacKay, Owner of Record: *Standard Abrasives, Inc., Northridge, Calif.,* Attorney or Agent: B. G. Nilsson, Ex. Gp.: 323

3,720,351, Re. S.N. 408,142, Filed Aug. 16, 1982, Cl. 222/1, PULVERIZED FUEL DELIVERY SYSTEM FOR A BLAST FURNACE, Earl E. Coulter, et al., Owner of Record: *Babcock & Wilcox Co., New York, N.Y.,* Attorney or Agent: R. C. Mai, Ex. Gp.: 311

3,877,244, Re. S.N. 472,225, Filed Dec. 15, 1982, Cl. 62/314, MODULAR DRY-AIR EVAPORATIVE COOLER, Leonard J. Di Peri, Owner of Record: *Inventor,* Attorney or Agent: David J. Breezner, Ex. Gp.: 344

3,980,339, Re. S.N. 398,381, Filed July 14, 1982, Cl. 299/2, PROCESS FOR RECOVERY OF CARBONACEOUS MATERIALS FROM SUBTERRANEAN DEPOSITS, David D. Heald, et al., Owner of Record: *Geokinetics, Inc., Concord, Calif.,* Attorney or Agent: Freling E. Baker, Ex. Gp.: 356

4,007,851, Re. S.N. 461,170, Filed Jan. 26, 1983, Cl. 215/307, ANTI-MISSILING BOTTLE CLOSURE, Rocco D. Walker, Owner of Record: *Zapata Industries, Inc., Frackville, Pa.,* Attorney or Agent: Stanton T. Lawrence, Jr., et al., Ex. Gp.: 241

4,028,912, Re. S.N. 300,902, Filed Sept. 10, 1982, Cl. 66/149R, FABRIC TAKE-UP MECHANISM, Richard Schneck, Owner of Record: *Sulzer Morat GmbH, Bonlanden, Germany,* Attorney or Agent: Jack F. Kramer, Ex. Gp.: 353

4,030,895, Re. S.N. 396,261, Filed July 8, 1982, Cl. 48/111, APPARATUS FOR PRODUCING COMBUSTIBLE GASES FROM CARBONACEOUS MATERIALS, Robert A. Caughey, Owner of Record: *First National Bank of Peterborough, Peterborough, N.H.,* Attorney or Agent: Robert T. Gammons, Ex. Gp.: 173

4,085,187, Re. S.N. 461,169, Filed Jan. 26, 1983, Cl. 264/280, PROCESS FOR COMPRESSION ROLLING OF POLYMERIC FILMS, Richard H. Jenks, et al., Owner of Record: *Revere Copper and Brass, Inc., New York, N.Y.,* Attorney or Agent: Willis H. Taylor, Jr., et al., Ex. Gp.: 147

4,105,937, Re. S.N. 428,772, Filed Sept. 30, 1982, Cl. 318/568, TEACH-IN METHOD AND APPARATUS FOR USE IN AN INDUSTRIAL ROBOT, Goro Tuda, et al., Owner of Record: *Kobe Steel Ltd., Kobe, Japan,* Attorney or Agent: Stanley P. Fisher, Ex. Gp.: 217

4,150,749, Re. S.N. 445,281, Filed Nov. 29, 1982, Cl. 209/437, ORE CONCENTRATOR TABLE SUPPORT, Walter W. Stevens, Owner of Record: *Inventor,* Attorney or Agent: Max E. Shirk, Ex. Gp.: 177

4,241,949, Re. S.N. 451,881, Filed Dec. 21, 1982, Cl. 297/003, ROCKABLE FURNITURE, Michael S. Parker, Owner of Record: *Inventor,* Attorney or Agent: Daniel H. Kane, Jr., Ex. Gp.: 355

4,245,461, Re. S.N. 459,185, Filed Jan. 19, 1983, Cl. 59/82, NON-EXPANSIBLE LINKAGE BRACKLET AND METHOD OF MANUFACTURE THEREOF, Stephen F. Bert, Owner of Record: *Textron, Inc., Providence, R.I.,* Attorney or Agent: Maurice E. Gauthier, et al., Ex. Gp.: 321

4,248,392, Re. S.N. 464,333, Filed Feb. 7, 1983, Cl. 242/96, APPARATUS FOR APPLICATION OF (PLASTICS STRETCH) SHEET-LIKE MATERIALS AND FILMS, John C. Parry, Owner of Record: *Inventor,* Attorney or Agent: Walter G. Finch, Ex. Gp.: 245

4,249,329, Re. S.N. 465,069, Filed Sept. 28, 1979, Cl. 40/361, APPARATUS FOR VIEWING AND SORTING PHOTOGRAPHIC SLIDE TRANSPARENCIES, Owen L. Lamb, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 333

4,249,426, Re. S.N. 465,453, Filed Feb. 10, 1983, Cl. 74/441, ANTI-BACKLASH NUT HAVING LONGITUDINAL FLEXURAL MEMBERS WITH RAMPS THEREON AND MEANS TO APPLY AN AXIAL PRE-LOAD FORCE TO SAID RAMPS, Kenneth W. Erikson, et al., Owner of Record: *Kerk Motion Products, Inc., Nashua, N.H.,* Attorney or Agent: Richard A. Wise, et al., Ex. Gp.: 352

4,309,655, Re. S.N. 405,859, Filed Aug. 6, 1982, Cl. 324/117R, MEASURING TRANSFORMER, Heinz Lienhard, et al., Owner of Record: *LGZ Landis and GYR Zug AG, Zug, Switzerland,* Attorney or Agent: George Finnegan, Ex. Gp.: 252

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,935,105, Reexam. No. 90/000,340, Requested: Mar. 4, 1983, Cl. 210/138, TUBULAR FILTER IN SETTLER, Stephen N. McEwen, Owner of Record: *Henry Manufacturing Co., Inc., Bowling Green, Ohio,* Attorney or Agent: Hugh Adam Kirk, Ex. Gp.: 176, Requester: Filtra-Systems, Inc., Bloomfield Hills, Mich.

3,976,622, Reexam. No. 90/000,334, Requested: Mar. 1, 1983, Cl. 525/60, PROCESS FOR THE PRODUCTION OF POLYISOCYANATES WITH A BIURET STRUCTURE, Kuno Wagner, et al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Joseph C. Gil, Ex. Gp.: 142, Requester: Asahi Kasei Kogyo Kabushiki Kaisha, Washington, D.C.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF AGRICULTURE

SN 6-171,625 (4,373,853). LOG HANDLING MACHINE.

U.S. DEPARTMENT OF THE AIR FORCE

SN 6-270,050 (4,373,255). METHOD OF MAKING OXIDE PASSIVATED MESA EPITAXIAL DIODES WITH INTEGRAL PLATED HEAT SINK.

U.S. DEPARTMENT OF THE ARMY

SN 6-111,738 (4,373,553). BROAD BAND FLUERIC AMPLIFIER.

SN 6-225,596 (4,373,688). CANARD DRIVE MECHANISM LATCH FOR GUIDED PROJECTILE.

SN 6-198,322 (4,373,808). LASER DOPPLER ATTITUDE MEASUREMENT.

SN 6-277,365 (4,373,977). METHOD OF MAKING A COMPOSITE WIRE.

SN 6-293,415 (4,374,091). GAS GENERATORS HAVING CONTROLLED OPERATIONAL ATTITUDES.

SN 6-219,056 (4,374,112). STABLE NF_4+ SALT OF HIGH FLUORINE CONTENT.

SN 5-471,792 (4,374,201). PROCESS FOR COATING A DRY VARIOLA VIRUS.

U.S. DEPARTMENT OF COMMERCE

SN 6-313,045 (4,374,171). SMOLDER AND FLAME RESISTANT INSULATION MATERIALS, COMPOSITION AND METHOD.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-294,203 (4,372,888). NONDENATURING ZWITTERIONIC DETERGENTS.

SN 6-459,251. ADAPTABLE BLOOD PRESSURE CUFF FOR HUMANS AND ANIMALS.

SN 6-458,312. MEDICATION COMPLIANCE MONITORING DEVICE.

SN 6-410,968. ANALGESIC AND ANTITUSSIVE NORMORPHINAN-6-ONES.

Errata

The following registration numbers were inadvertently canceled in the "Trademarks Registrations Canceled, Section 8" section of the Official Gazettes listed below:

965,550	TM144	Feb. 12, 1980
992,970	TM453	Feb. 24, 1981
996,127	TM571	Mar. 31, 1981
996,317	TM572	Mar. 31, 1981
1,030,329	TM450	June 15, 1982
1,028,255	TM294	July 13, 1982
1,049,458	TM149	Mar. 1, 1983

Consequently, the above-identified registrations are still active.

MARK M. NEWMAN,
Mar. 15, 1983. *Director Trademark Examining Operation.*

PATENT NOTICES

Certificates of Correction for the Week of Apr. 12, 1983

D. 267,653	4,350,974	4,359,907	4,368,275
4,024,163	4,351,631	4,360,203	4,368,729
4,105,235	4,351,909	4,360,423	4,368,815
4,200,257	4,352,369	4,360,499	4,368,901
4,239,383	4,352,653	4,360,713	4,369,102
4,251,801	4,352,738	4,361,067	4,369,189
4,265,331	4,352,810	4,361,440	4,369,337
4,271,734	4,353,783	4,361,441	4,369,573
4,277,454	4,353,834	4,361,553	4,369,892
4,290,003	4,354,077	4,362,446	4,369,913
4,302,098	4,354,258	4,362,731	4,370,169
4,302,255	4,354,628	4,363,106	4,370,214
4,308,342	4,354,925	4,363,302	4,370,327
4,310,065	4,355,246	4,364,632	4,370,382
4,311,033	4,355,310	4,364,747	4,370,405
4,313,850	4,355,504	4,364,778	4,370,459
4,331,395	4,356,210	4,364,783	4,370,610
4,332,809	4,356,245	4,365,095	4,370,726
4,333,878	4,356,273	4,365,110	4,370,730
4,335,041	4,356,430	4,365,151	4,371,066
4,336,587	4,356,972	4,365,195	4,371,344
4,338,453	4,357,085	4,366,323	4,371,375
4,340,417	4,357,125	4,367,116	4,371,443
4,340,997	4,357,144	4,367,217	4,371,948
4,346,352	4,357,581	4,367,297	4,372,017
4,346,697	4,357,640	4,367,462	4,372,024
4,347,381	4,357,666	4,367,586	4,372,128
4,347,847	4,358,057	4,367,686	4,372,324
4,348,851	4,358,108	4,367,708	4,372,344
4,349,661	4,358,158	4,367,782	4,372,611
4,349,817	4,358,803	4,367,801	4,373,732
4,349,936	4,359,706	4,367,905	
4,350,628	4,359,754	4,368,129	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries, except the Cleveland Public Library, offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 19, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	7-14-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-20-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-12-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	4-7-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-12-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	1-07-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-13-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	5-18-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-12-80

Expiration of patents: The patents within the range of numbers indicated below expire during February 1983, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,231,896 to 3,237,200, inclusive

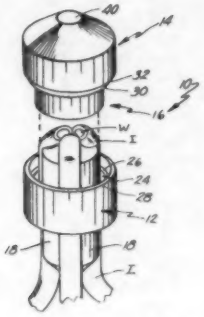
Plant Patents ..... Numbers 2,591 to 2,605 inclusive

REEXAMINATIONS

APRIL 12, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 4,295,004 (71st)
WIRE CONNECTOR
William C. Dauser Jr., Trustee North Muskegon, Mich., assignor to Lloyd A. Heneveld, Grand Rapids, Mich.
Reexamination Request No. 90/000,133, Dec. 28, 1981.
Reexamination Certificate for Patent No. 4,295,004, issued Oct. 13, 1981, Ser. No. 99,624, Dec. 3, 1979.
U.S. Cl. 174/87 **Int. Cl.³ H01R 11/00.**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **6–17** is confirmed.

Claims **1, 4** and **5** are determined to be patentable as amended.

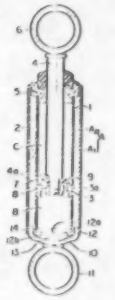
Claims **2** and **3**, dependent on amended claims, are determined to be patentable.

1. A self-stripping solderless electrical connector comprising:

an elongated body of insulating material *having a surface extending along an axis of said body and* having wire *conductor* receiving channels formed along at least a portion of [its] *the* length *of said surface, extending in the same general direction of said axis, and located at spaced intervals around said axis;*

a cap member *of insulating material* having a conductive member fixed thereto, said cap member and said conductive member being adapted for positioning over and *snugly interfitting with said elongated body upon being linearly* movable *in a linear direction* along *said axis and along* a portion of said elongated body and said channels; said conductive member [adapted] *having a cutting edge; said channels being tapered inwardly toward said axis whereby by means of the snug interfit of said conductive member with said body, upon said movement of said cap member and conductive member in said linear direction along said portion of said elongated body said cutting edge is guided along the channels* to engage a plurality of insulated wire conductors positioned in said channels, cut through the insulation thereof *in a direction lengthwise of said conductors,* and [engage] *make electrical contact with the wires of said* wire conductors to provide an electrical connection *between said wires* [therebetween upon movement of said cap member and conductive member along said elongated body].

B1 4,189,034 (72nd)
HYDRAULIC DAMPER
Tetuo Kato, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan
Reexamination Request No. 90/000,189, Apr. 13, 1982.
Reexamination Certificate for Patent No. 4,189,034, issued Feb. 19, 1980, Ser. No. 922,163, Jul. 5, 1978.
U.S. Cl. 188/318 **Int. Cl.³ F16F 9/06.**



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claim **2**, dependent on an amended claim, is determined to be patentable.

1. In a hydraulic damper having a cylinder having an actuating chamber therein for containing hydraulic oil, a piston slidable in the actuating chamber and partitioning said actuating chamber into upper and lower portions, a piston rod having one end thereof being secured to the piston and the other end thereof projecting through the upper end of the cylinder to the outside, a resisting force generating means mounted on the piston for controlling oil flow across the piston for generating resisting force against the movement of the piston in both directions in the cylinder, a volume compensating chamber disposed around the actuating chamber and having hydraulic oil and gas therein for compensating for the change in volume of hydraulic oil in the actuating chamber caused by ingress or exit of the piston rod into or out of the actuating chamber, and unvalved passage means for the hydraulic oil permanently connecting only the lower end of said volume compensating chamber with the lower portion of said actuating chamber, the improvement wherein said passage means has a hydraulic oil passage there through with a cross-sectional size for generating a pressure in the lower portion of said actuating chamber which increases with an increase in the flow rate there-

through and which is substantially higher than that of the volume compensating chamber and than that of the upper portion of the actuating chamber when the piston moves at the maximum speed in the contraction stroke of the damper, whereby the pressure of the gas in said volume compensating chamber necessary for causing opening of said resisting force generating means can be substantially reduced *to atmospheric pressure.*

B1 3,344,023 (73rd)

TREATMENT OF HYPERTENSION WITH L-ALPHA-METHYL-3,4-DIHYDROXYPHENYLALANINE

Donald F. Reinhold and Meyer Sletzinger, North Plainfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Reexamination Request No. 90/000,127, Dec. 21, 1981.
Reexamination Certificate for Patent No. 3,344,023, issued Sep. 26, 1967, Ser. No. 255,641, Feb. 1, 1963.
U.S. Cl. 424/319 **Int. Cl.³ A61K 31/195.**

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **1** is confirmed.

1. A method of treating hypertension which comprises the oral administration to a hypertensive patient of 0.1 to 5.0 g. of L-α-methyl-3,4-dihydroxyphenylalanine substantially free of its D form.

REISSUES

APRIL 12, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

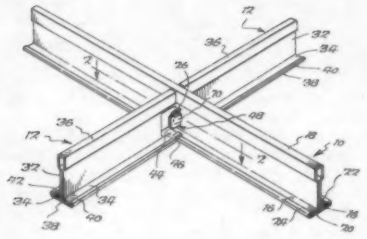
Re. 31,201
LOCKING CONNECTION FOR SUPPORTING GRID SYSTEMS

Gale E. Sauer, Williamsville, N.Y., assignor to Donn Products Incorporated, Westlake, Ohio

Original No. 3,922,829, dated Dec. 2, 1975, Ser. No. 397,432, Sep. 14, 1973. Application for reissue Aug. 27, 1979, Ser. No. 69,774

Int. Cl.³ E04C *2/42*

U.S. Cl. 52—667 **7 Claims**



1. A locking connection for supporting grid systems and the like comprising a first support member having a flange and a web upstanding therefrom; said web being provided with a slot; a second support member having a flange and web upstanding therefrom; said second member web being provided with a locking connector extending axially therefrom and insertable through said slot; said locking connector having a first portion engaging one side of said first support member web and a resiliently yieldable second portion having a terminal edge inclined at an angle relative to the plane of said first support member web in the fully assembled relation therewith; said terminal edge having at least a portion thereof engaging against the side of said first support member web opposite said first locking connector portion whereby said first portion and said edge portion simultaneously engage the opposite sides of said first support member web in the fully assembled relation therewith.

Re. 31,202
POULTRY BEAK REMOVER

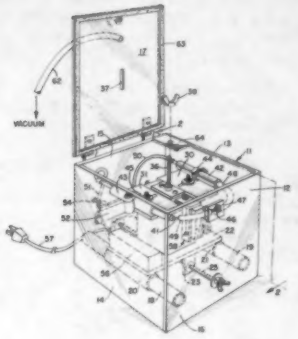
John S. Goodling; Gayner R. McDaniel, both of Auburn, Ala., and Richard A. Steadham, Texas City, Tex., assignors to Auburn Research Foundation, Auburn, Ala.

Original No. 4,040,425, dated Jun. 9, 1977, Ser. No. 646,924, Jan. 6, 1976. Application for reissue Aug. 2, 1979, Ser. No. 63,355

Int. Cl.³ A61B *17/36*

U.S. Cl. 128—303.14 **15 Claims**

1. A poultry beak remover for debeaking fowl, comprising: a housing having a beak receiving aperture therein of a size to receive the beak of a fowl, for insertion of the beak of a fowl into the housing; a pair of spaced apart electrodes supported in the housing in substantial alignment with the aperture and spaced therefrom a distance such that when the beak is inserted through the aperture, a portion thereof extends between the electrodes; and electrical circuit means connected with the electrodes for discharging a spark across the electrodes to burn



the beak of the fowl received therebetween and thus effect removal of a desired portion of the beak.

Re. 31,203
APPARATUS FOR CLEANING INSIDE AND OUTSIDE SURFACES OF CONTAINERS

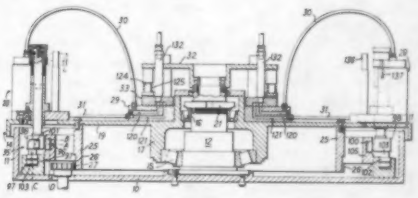
John M. Jackson, Potters Bar, England, assignor to Cleamax Limited, Hertfordshire, England

Original No. 4,026,311, dated May 31, 1977, Ser. No. 560,143, Mar. 20, 1975. Application for reissue Aug. 2, 1978, Ser. No. 930,658

Claims priority, application United Kingdom, Mar. 21, 1974, 12651/74

Int. Cl.³ B08B *3/00*; **B67C** *1/00*

U.S. Cl. 134—48 **28 Claims**



28. Apparatus for cleaning open-mouthed containers of a given size, the apparatus comprising a frame; a turret rotatably mounted on said frame; a plurality of pot assemblies supported on the turret, each pot assembly having a core, a shell, and a lid co-operating with said core and shell to define a cavity for reception of one of said containers and said cavity having at least one wall, the cavity having a shape corresponding approximately to that of the container and a size such that the container therein subdivides the cavity into two chambers in which the wall of the cavity is spaced close to the inside and outside surface of the container, and conduit means for passing cleaning fluid through said chambers so that the cleaning fluid fills the chambers and flows along the inside and outside surfaces of the container, drive means operable to rotate the turret so that each pot assembly passes in succession past a container unloading station and a container loading station, lid control means operable to move the lid of each pot assembly

into an open position immediately prior to passage of the pot assembly past said unloading station to permit ejection of a cleaned container at said unloading station and introduction of a container to be cleaned into the cavity of the pot assembly at said loading station, said lid control means also being operable to move the lid of each pot assembly into a closed position immediately after passage of the pot assembly past said loading station, and valve means for regulating flow of fluid through said conduit means and chambers only during passage of each pot assembly between said loading station and said unloading station.

Re. 31,204

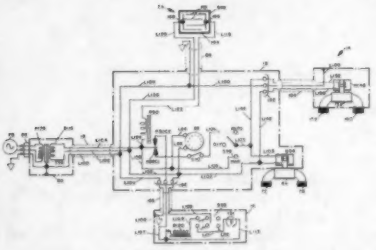
SPRINKLER FLOW CONTROL SYSTEMS

George E. Sanner, Cypress Hill, Sparks, Md. 21204

Original No. 4,014,359, dated Mar. 29, 1977, Ser. No. 625,350, Oct. 23, 1975. Continuation-in-part of Ser. No. 466,693, May 3, 1974, which is a continuation-in-part of Ser. No. 272,793, Jun. 18, 1972, Pat. No. 3,848,616, which is a continuation-in-part of Ser. No. 18,829, Feb. 12, 1970, abandoned, which is a division of Ser. No. 456,787, May 18, 1965, Pat. No. 3,500,844. Application for reissue Mar. 28, 1979, Ser. No. 24,685

Int. Cl.³ A01G *25/16*

U.S. Cl. 137—78.3 **49 Claims**



54. A flow control for a fluid flow system having a fluid conduit with a flow control valve therein, said flow control valve having an electrically operated valve actuator means and said flow control comprising: a first circuit means for connecting a source of operating voltage to said valve actuator means; a first switching means comprising timing means for automatically completing said first circuit means to energize said valve actuator means and thereby open said valve and allow flow of fluid through said conduit for a predetermined period of time, and upon completion of said time period, for interrupting said first circuit means, causing said valve actuator means to be de-energized and said valve to close, thereby terminating flow through said conduit; a second switching means which, when energized, interrupts the continuity of said first circuit means, thereby overriding said first switching means and de-energizing said valve actuator means, thus causing said valve to open and terminate fluid flow through said conduit and which, upon de-energization of said switch actuator means, restores control of said first switching means over said valve actuator means, completing continuity of said first circuit means and energizing said valve actuator means, causing said valve to open and said fluid to flow therethrough, said second switching means comprising a switching means with an electrically operated actuator means; a third circuit means comprising, in series, said switch actuator means, third circuit conductor means, said source of operating voltage, and moisture sensitive switching means which, when closed, completes continuity of said third circuit means and which, when open, interrupts continuity of said third circuit means; said moisture sensitive switching means are adapted to be electrically connected by the presence of rain on said moisture sensitive switch, thereby completing the continuity of said third circuit means, energizing said switch actuator means, overriding said first switching means, interrupting said first circuit means, de-energizing said valve actuator means, closing said valve, and terminating fluid flow therethrough; said means which are adapted to be electrically connected by the presence of rain on said moisture sensitive switching means being further adapted, concomitantly with the subsequent absence of rain thereon, to interrupt said third circuit means, thereby de-energizing said switch actuator means and restoring control of said valve actuator means to said first switching means; and when said second switching means is energized, said source of operating voltage energizes a second circuit means providing said source of operating voltage for ancillary control when said moisture switch is activated and said first circuit means is interrupted.

97. A flow control for a fluid flow system, comprising: a casing having a cylindrical main casing member, a bottom cover fitted and fixed to said casing member at one end thereof, a panel affixed to and closing said main casing member at the opposite end thereof, said panel having a peripheral flange in contiguous abutment with the main casing member, and a top cover which is telescoped over said peripheral panel flange to form a closure between said top cover and the exterior of said panel, said bottom cover having a portion spanning said main casing member and a peripheral flange abutting the interior of said main casing member; a continuous annular gasket inserted contiguously between the peripheral extremities of said panel flange and said main casing member, the peripheral extremity of said panel flange being sandwiched circumferentially into one annular face of said annular gasket, and the opposite annular face thereof being telescoped over said peripheral extremity of said main casing member, thereby providing a seal between said top cover and said main casing member; a fluid flow valve disposed in said casing, said valve having an inlet and an outlet and an electrically operated actuator; conductor means extending from the interior to the exterior of said casing for electrically connecting said actuator to an external electrical power source; manually manipulatable connection means externally of said casing to which fluid supply and delivery means can be coupled; and means providing fluid communication from said connection means to the inlet and outlet of said fluid flow valve.

Re. 31,205

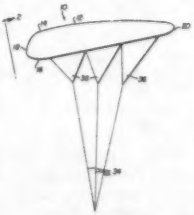
AERIAL SLED

Domina C. Jalbert, 425 Wavecrest Ct., Boca Raton, Fla. 33432

Original No. 3,972,495, dated Aug. 3, 1976, Ser. No. 383,629, Jul. 30, 1973. Division of Ser. No. 41,022, May 27, 1970, Pat. No. 3,749,337, which is a continuation-in-part of Ser. No. 867,116, Sep. 30, 1969, abandoned. Application for reissue Aug. 1, 1978, Ser. No. 930,000

Int. Cl.³ B64D *17/02*

U.S. Cl. 244—145 **16 Claims**



8. An aerial device comprising a flexible wing having upper and lower flexible walls, each wall having a forward edge and a rearward edge, said rearward edges of said upper and lower flexible walls forming a wing trailing edge, said forward edges of said upper and lower walls being spaced apart to form first opening means at the forward edges, flexible side walls defining a hollow space with said flexible upper and lower walls, said first opening means providing for a flow of air into said wing for pressurizing said wing, shroud means connected to said lower flexible wall, a second opening means located in said lower flexible wall, and flexible valve means in said second opening means whereby said

second opening means and said valve means may provide for a flow of air into said wing from the bottom thereof for pressurizing said wing.

Re. 31,206

METHOD OF LOWERING AND RAISING LOADS BY MEANS OF A JACK ASSEMBLY AND LIFTING ELEMENT

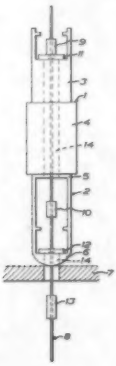
Nils H. Ahlgren, 22 Skyttevägen, S-133 00 Saltsjöbaden, Sweden

Original No. 3,895,778, dated Jul. 22, 1975, Ser. No. 321,154, Jan. 5, 1973. Application for reissue Jul. 15, 1977, Ser. No. 815,989

Claims priority, application Sweden, Jan. 12, 1972, 295/72

Int. Cl.³ B66F *1/00*

U.S. Cl. 254—1 **11 Claims**



1. A method of lowering and raising a load by means of a jack assembly and lifting element, which comprises transferring the load from the lifting element by supporting means moveable along said lifting element and alternately carrying the supporting means by one-and-then the other of two carrying means having holes accommodating the passage of the lifting element, with said carrying means being mounted on [relatively moveable] parts of the jack assembly *which are moveable relative to each other,* and said lifting element being joined in series with other lengths of lifting element by connectors of a size incapable of passing through the holes of the carrying means *and of a length substantially less than that of any one length of lifting element,* and alternately dismounting the [carrier] *carrying* means to permit free passage of the connectors *upwards and downwards* and thus *to permit free passage of* the joined lengths of the lifting element.

Re. 31,207

LEAK CURRENT SUPPRESSING PRINTED CIRCUIT BOARD

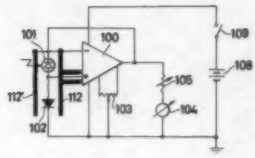
Tokuichi Tsunekawa, Yokohama, and Tetsuya Taguchi, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

Original No. 4,114,036, dated Sep. 12, 1978, Ser. No. 703,962, Jul. 9, 1976. Application for reissue Jul. 17, 1979, Ser. No. 58,198

Claims priority, application Japan, Jul. 24, 1975, 50-90533

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—214 R **23 Claims**



6. A device for preventing leakage current in a light responsive circuit of a camera comprising:

(a) a photoelectric element in the light responsive circuit for receiving light from an object; and

(b) a guard line surrounding at least a part of said light responsive circuit, said guard line having applied thereto a potential equal to the potential of the light responsive circuit for preventing leakage current in a light responsive circuit.

Re. 31,208

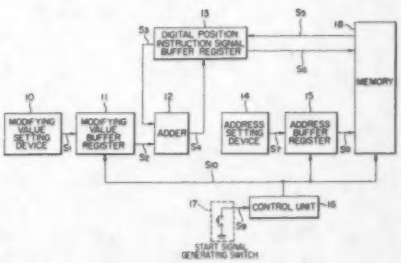
SIGNAL MODIFICATION DEVICE FOR MEMORY CONTROLLED MANIPULATOR APPARATUS

Takehiko Watanabe, Akashi, Japan, assignor to Unimation, Inc., Danbury, Conn.

Original No. 4,025,838, dated May 24, 1977, Ser. No. 536,542, Dec. 26, 1974. Application for reissue Apr. 26, 1979, Ser. No. 33,482

Int. Cl.³ G05B *19/00*

U.S. Cl. 318—568 **27 Claims**



27. In a programmable manipulator, the combination of, a manipulator arm movable in a plurality of axes, memory storage means having stored therein a program comprising a plurality of digital command signal steps corresponding to successive different positions to which said arm is to be moved during each one of a plurality of playback cycles; means controlled by said stored command signal program steps for sequentially moving said arm to said different positions, means for setting and inputting preselected data corresponding to a desired modification in direction and magnitude of at least one of said stored program steps, means for identifying and addressing said one program step in said memory storage means, means for combining said one program step and said desired positional modification data to produce a modified program step, and means for writing said modified program step into said memory storage means.

PLANT PATENTS

GRANTED APRIL 12, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,030

CARNATION NAMED STACHERRY

Maurits C. van Staaveren, 30 Hornweg, at 1432 GM, Aalsmeer, Netherlands, assignor to B. V. Handelskwekerij and M. C. van Staaveren, both of Aalsmeer, Netherlands

Filed Jan. 15, 1981, Ser. No. 225,333
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—71 1 Claim

1. A new and distinct variety of carnation plant, substantially as herein shown and described, characterized by its continuous and profuse production of medium sized flowers of a deep pink color carried on long, strong and erect stems.

5,031

ROSE PLANT

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed Oct. 1, 1981, Ser. No. 307,379
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized by flowers of orange red and yellow coloring darkening before fading and borne singly as well as in large sprays.

5,032

ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Oct. 5, 1981, Ser. No. 308,488
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—9 1 Claim

1. A new and distinct variety of miniature rose plant of hardy; dwarf, bushy, rounded, much branched habit, substantially as illustrated and described, characterized by buds and flowers that are essentially pink in color, the outer petals being generally of a lighter pink than the inner petals giving the freshly open flower a blended or two color effect; the general habit of growth as well as flower form and color being similar to June Time (miniature—U.S. Plant Pat. No. 2,563), and further characterized by a plant of compact well rounded shape; vigorous; the said plant being easy to propagate from cuttings, with an abundance of small matte foliage and an abundance of flowers borne singly or several to the stem in loose clusters.

5,033

ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Oct. 5, 1981, Ser. No. 308,799
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—9 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit, substantially as illustrated and described, characterized by buds and flowers of exhibition form, essentially pink to rose pink in color and resembling Mary Marshall (miniature—U.S. Plant Pat. No. 3,346) in bud and flower form but being somewhat larger in size; and further characterized by a plant of compact well rounded shape with above average vigor, the said plant being easy to propagate from cuttings or by budding, with an abundance of small semi-glossy to matte foliage and an abundance of flowers borne singly or several to the stem in loose clusters.

5,034

HIBISCUS PLANT

Roberta J. Ludick, 13095 NE. 2nd Ave., North Miami, Fla. 33161

Filed Dec. 21, 1981, Ser. No. 310,070
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—54 1 Claim

1. A new and distinct variety of hibiscus plant, of *Rosa-sinensis* species, substantially as herein described and illustrated, and characterized particularly as to novelty by its vigorous, upright habit of growth, its crisp green foliage, and its brilliant, long-lasting flowers.

5,035

HYBRID MINIATURE ROSE PLANT CV. ARORASP

Jack E. Christensen, Ontario, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Oct. 23, 1981, Ser. No. 314,239
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—8 1 Claim

1. A new and distinct variety of rose plant of the hybrid miniature class, substantially as herein shown and described, and being especially characterized by its deep yellow buds and blooms of unique wavy form, by its tall, vigorous, upright, bushy habit that produces, on long stems suitable for cutting, flowers of heavy substance and good color retention.

5,036

HYBRID SHRUB ROSE CV. MACMIGMOU

Samuel McGredy, IV, Auckland, New Zealand, assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Oct. 23, 1981, Ser. No. 314,243
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—2 1 Claim

1. A new and distinct variety of rose plant of the hybrid shrub class, substantially as herein shown and described, and being especially characterized by its orange and white blooms with a distinct near white "eye" coloration in the center of each flower; the abundance of its "eyed" flowers borne on pyramidal clusters; a vigorous easily grown shrub with excellent disease resistance; and its total dropping of faded petalage.

5,037

ROSE PLANT—71-4992

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Nov. 6, 1981, Ser. No. 318,998
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—20 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, upright plant, ability to open blooms well in all weather, quilled petals, red color lighter than that of American Pride, deltoid shaped petals and little fragrance.

5,038

MINIATURE ROSE PLANT — MEIDDANEGO VARIETY

Marie L. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Nov. 6, 1981, Ser. No. 319,105
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—10 1 Claim

1. A new and distinct variety of Rose plant of the Miniature Class, which is a sport of the Meirov variety, substantially as illustrated and described, characterized by the fact that:

from the physical standpoint the plant has medium green adult wood and a bushy growth habit, and forms double flowers which are blood red in color wherein the petals are yellowish at the base and possess a great degree of substance; and

from the biological standpoint the plant has vigorous vegetation, is well adapted to hot culture, is resistant to disease, and has the ability to hold its flowers for a long period of time.

5,039

ROSE PLANT 78-5111—PETTICOAT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Nov. 6, 1981, Ser. No. 319,106
Int. Cl.[3] A01H 5/00
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its compact plant, mildew resistant foliage, pink edged white, very double flowers.

PATENTS

GRANTED APR. 12, 1983

ERRATA

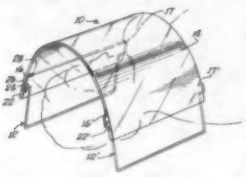
For CLASS	See PATENT #
604–006	4,379,4
604–145	4,379,4
604–897	4,379,4
604–320	4,379,4
604–264	4,379,4
428–042	4,379,5
436–082	4,379,7
419–060	4,379,7
436–545	4,379,7
436–543	4,379,7
378–136	4,379,97

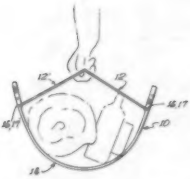
PATENTS

GRANTED APRIL 12, 1983

GENERAL AND MECHANICAL

4,379,349
SUN-OUT FACE SHIELD
Betty D. Larson, 3915 Lupe, Chino, Calif. 91710
Filed Nov. 28, 1980, Ser. No. 211,081
Int. Cl.³ A42B *1/18;* A45C *3/00*
U.S. Cl. 2—9 **7 Claims**

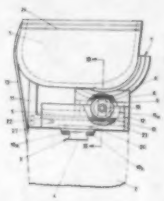




1. A face shield to cover a sunbather's head and face comprising a sheet member of transparent, ultraviolet blocking material formed into a cylindrical or hyperbolic arch resting upon a pair of generally "U"-shaped leg members which are respectively rotatably attached to each one of the lower end regions of said arched sheet member, said leg members, when used to support said arched sheet member, being blocked by contact with said arched sheet member from rotations respectively outward from the concave region beneath said arched sheet member, and said leg members, when equally rotated toward the plane bisecting the concave region in a direction parallel to the axis of revolution of the arched sheet member, come into close proximity with each other to serve as carrying handles for the face shield when inverted to form a tote.

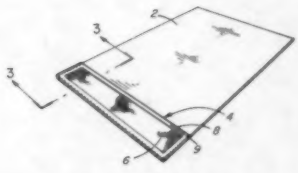
4,379,350
PROSTHETIC JOINT FOR KNEE AND ABOVE-KNEE AMPUTEES
Günter Munny, Wipperfürther Str. 49, 5064 Odenthal-Elkamp, Fed. Rep. of Germany
Filed Jun. 1, 1981, Ser. No. 268,719
Claims priority, application European Pat. Off., Feb. 11, 1981, 81100947.1
Int. Cl.³ A61F *1/04, 1/08*
U.S. Cl. 3—22 **8 Claims**

1. Prosthetic joint for knee and above-knee amputees, comprising a hollow shank (**1**), open at the top for receiving the femoral stump and, articulatedly joined to this shank, an attachment member (**3**) for fitting of a below-knee prosthesis (**2**), wherein the articulated joint comprises a guide member (**5, 105**), connected rigidly to the attachment member (**3**) and having rectilinear guide grooves (**17***a*,**17***b*;**117***a*, **117***b*), a slide member (**6,106**) guided slidably in said guide member, a support (**7, 107**) guided shiftably in said slide member by means of arcuate guide bars (**18***a*,**18***b*;**118***a*,**118***b*), which support is connected rigidly to the shank (**1**), and a gearing located between the arcuate support (**7, 107**), on the one hand, and the guide member (**5,105**) on the other hand, the gearing consisting of an arcuate rack (**8,108**) on the support (**7, 107**), a rectilinear rack (**10**;**110***a*,**110***b*) on the guide member (**5, 105**) and a pinion (**9, 109**) rotatably mounted in the slide member (**6, 106**) and engaging the two racks (**8,108**;**10,110***a*,**110***b*), the gearing effecting a



forward displacement of the slide member (**6, 106**) and, thereby, of the shank (**1**) upon a pivotal movement of the shank (**1**) relative to the attachment member (**3**).

4,379,351
DEBRIS TRAP FOR POOL COVER
Cornelius A. Hinsperger, 28 Columbus Crescent, Guelph, Ontario, Canada
Filed Mar. 30, 1981, Ser. No. 249,233
Claims priority, application Canada, Mar. 24, 1981, 373575
Int. Cl.³ E04H *3/19*
U.S. Cl. 4—498 **16 Claims**

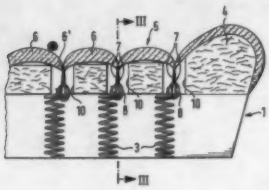


1. A flexible cover for a swimming pool comprising a sheet of flexible material of a size to cover the pool and an upper layer of flexible material overlying a part of the area of said sheet with said upper layer being peripherally secured to said sheet and having a free inner edge, said upper layer and said sheet constituting a pair of cooperating pocket-defining members providing therebetween a pocket having a pocket opening spaced inwardly from an edge of said cover, at least a portion of the material of at least one of said pocket-defining members being perforate permitting passage of water therethrough while retaining in said pocket accumulated debris during removal of the cover from the pool.

4,379,352
MOTOR VEHICLE SEAT AND PROCESS RELATING THERETO
Siegfried Häuslein; Hans Steinberger; Willibald Heigl, all of Munich; Georg Scheichl, Unterschleissheim, and Erwin Kauderer, Munich, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany
Filed Mar. 31, 1980, Ser. No. 135,527
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912461
Int. Cl.³ A47C *7/02*
U.S. Cl. 5—471 **6 Claims**

1. A seat comprising a seat component and a back compo-

nent, at least one of the seat component and back component including a spring core, a cushion layer, and a ribbed upholstery cover provided with a plurality of spaced parallel ribs defined by spaced parallel rib seams, a plurality of individual securing tabs being provided at respective portions along the



rib seams on a side of the upholstery cover which faces the cushion layer for connecting the upholstery cover to the spring core in an essentially point type fastening arrangement, each securing tab including a first end portion attached to a seam of the ribs and a free end portion which is secured directly to a coil of the spring core by a fastener.

4,379,353

CONTINUOUS METHOD FOR BLEACHING WITH PEROXIDE

Horst Holderer, Krefeld, and Johannes Kutz, Tonisvorst, both of Fed. Rep. of Germany, assignors to Eduard Kusters, Krefeld, Fed. Rep. of Germany

Filed Nov. 25, 1980, Ser. No. 210,301

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010139

Int. Cl.³ D06L *3/16*

U.S. Cl. 8—149.1 **6 Claims**

1. In a continuous method for bleaching goods containing cotton with peroxide, wherein a web of material is left standing in a bleaching bath and is subsequently steamed, the improvement comprising carrying out the step of leaving the material standing by means of a retention in folded condition at a temperature of 60±10° C., and carrying out the steaming, with the material under tension, at a temperature in the vicinity of 100° C.

4,379,354

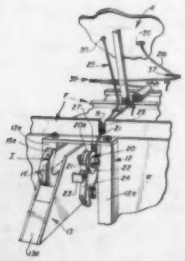
RELEASABLE LOCKING DEVICE

Norbert Hahn, Cudahy, and Steven J. Hipp, Milwaukee, both of Wis., assignors to Rite-Hite Corporation, Milwaukee, Wis.

Filed Aug. 5, 1981, Ser. No. 290,348

Int. Cl.³ E01D *1/00*

U.S. Cl. 14—71.3 **11 Claims**



1. A releasable locking device for use in securing a parked vehicle to an adjacent structure, said device comprising a carriage mountable on the structure for limited relative movement in a substantially vertical plane and being biased to assume a predetermined elevated rest position; a rotary first means carried on said carriage and movable therewith in said substantially vertical plane, said first means being rotatable between an operative mode and an inoperative mode, when in said operative mode, said first means having a section thereof projecting outwardly from said carriage and being adapted to interlockingly engage the parked vehicle, and when in an inoperative mode, having said section in a depending vehicle-release position and substantially enclosed within said carriage; second means operatively connected to said first means to effect movement of the latter from said inoperative mode to said operative mode, said second means including a rotary first member carried on said carriage adjacent to said first means, said first means and said first member rotating as a unit about a common axis, a flexible second member having one end portion thereof connected to the periphery of said first member and a second end portion thereof remote from said first member for imparting a manual pull thereto to effect a predetermined tangential force in one direction on said first member and movement of said first means from said inoperative mode to said operative mode, and a unit connected to and intermediate the end portions of said flexible second member to effect the application of said predetermined tangential force on said first member from a manual pull force of substantially less magnitude applied to the second end portion of said flexible second member; and third means mounted on said carriage for releasably retaining said first means in said operative mode.

4,379,355

WASHING MACHINE FOR HOLLOWWARES

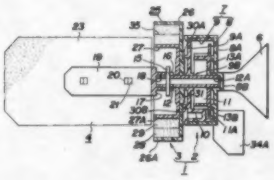
Kiyoshi Kobayashi, Noda, and Shuji Suga, Fujishiro, both of Japan, assignors to Hukuba Kogyo Kabushiki Kaisha, Chiba, Japan

Filed Jun. 5, 1981, Ser. No. 270,831

Claims priority, application Japan, Feb. 6, 1981, 56-15480[U]; Feb. 16, 1981, 56-20470[U]

Int. Cl.³ A47L *15/00*

U.S. Cl. 15—101 **9 Claims**



1. A washing machine for washing hollowwares comprising:

casing means having secured to the interior thereof stationary teeth means;

rotary gear means meshing with said stationary teeth means and rotatably mounted in the interior of said casing means;

a rotating shaft projected outwardly from said casing means and connected to said rotary gear means;

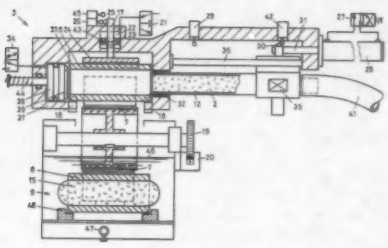
a washing implement mounted on a projected end of said rotating shaft, said washing implement adapted to be covered with a hollowware to be washed; and

said rotary gear means being movable along said stationary teeth means by means of a hollowware held by an operator's hand, thereby rotating said rotary gear means, said rotating shaft and said washing implement about the axis of said rotating shaft.

4,379,356
METHOD AND APPARATUS FOR PRODUCING SKINLESS SAUSAGES

Hans Geissbühler, Zuzwil, Switzerland, assignor to C. Hoegger & Cie, A.G., Gossau, Switzerland

Filed Nov. 13, 1980, Ser. No. 206,360
Claims priority, application Switzerland, Nov. 21, 1979, 10391/79
Int. Cl.³ A22C *11/00*
U.S. Cl. 17—45 6 Claims



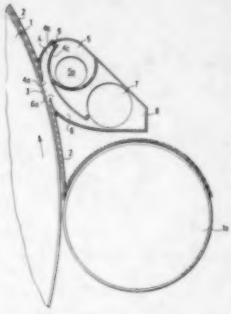
1. Apparatus for producing skinless sausages, comprising:
a. a plurality of individual molds;
b. conveying means to convey said molds sequentially along a predetermined path;
c. filling means to introduce sausage meat into said molds;
d. heating means to coagulate the surface of said sausage meat in the molds; and
e. means to extract the surface-coagulated sausages from said molds; wherein the improvement comprises:
f. said molds comprise hollow tubes open at least at one end, and are loosely supported on the conveying means;
g. means at a filling station along said path for releasably gripping a mold to hold it against movement relative to said conveying means;
h. said filling means including:
1. a filling tube insertable into a gripped mold through an open end thereof;
2. means for reciprocating the filling tube into and out of said gripped mold; and
3. means for supplying ground sausage meat under pressure to said filling tube during reciprocation thereof; and
i. means effective after movement of the filling tube out of the gripped mold to release said gripping means;
j. said heating means being effective to expand the meat through the open ends of the molds and to coagulate the surfaces of the meat at the open ends of the molds.

4. A method of producing skinless sausages, comprising:
a. introducing sausage meat into a plurality of individual molds;
b. heating the molds until the surface of the sausage meat is coagulated; and
c. extracting the surface-coagulated sausages from the molds;
wherein the improvement comprises:
d. said molds are hollow tubes having at least one end open during said heating, so that the sausage meat is free to expand at said open ends and coagulates at its expanded end surfaces.

4,379,357
METHOD AND APPARATUS FOR SEPARATING WASTE FROM A FIBER-AND-WASTE MIXTURE

Wolfgang Beneke, and Walter Jager, both of Monchen-Gladbach, Fed. Rep. of Germany, assignors to Trutzschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Jul. 31, 1980, Ser. No. 174,103
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931699
Int. Cl.³ D01G *15/80*
U.S. Cl. 19—105 9 Claims



5. In an apparatus for separating fibers from a fiber-and-waste mixture in a textile machine having a rotary roll entraining said mixture; including means for effecting a detachment of the mixture from said roll in a first zone for causing a travel of the mixture tangentially to the roll under the effect of the centrifugal force thereof; the improvement comprising
(a) means defining a braking channel having an inlet positioned to receive the mixture traveling from said roll;
(b) air pressure means including a pressurized air channel for directing pressurized air to said inlet of said braking channel for impinging on the mixture in a second zone downstream of said first zone as viewed in the direction of travel of the mixture for decelerating particles of said mixture passing into said braking channel through said inlet, whereby fibers of the mixture are returned to the roll and waste particles of the mixture are allowed to continue their travel in said braking channel;
(c) means defining a waste collecting chamber communicating with an outlet of said braking channel; and
(d) suction means communicating with said waste collecting chamber for removing particles therefrom.

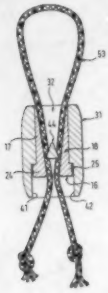
4,379,358
CORD ADJUSTERS

Güter Wibrow, Norderstedt, Fed. Rep. of Germany, assignor to ITW-ATECO GmbH, Norderstedt, Fed. Rep. of Germany

Filed Jul. 30, 1981, Ser. No. 288,701
Int. Cl.³ F16G *11/00*
U.S. Cl. 24—136 R 10 Claims

1. A cord adjuster comprising a body having a through passage which is divided longitudinally for the accommodation of cord sections capable of being passed therethrough in side-by-side spaced arrangement and an arresting member supported on the body for displacement between two end positions, said arresting member being provided with clamping areas disposed in the through passage and cooperating with respective associated clamping areas of the body in order to clamp the cord sections between them in tight clamping engagement in one end position of the arresting member, characterised in that the passage is at least in part an open-topped channel, a stationary clamping projection is arranged on the bottom of the channel, and the arresting member is a lid member slidingly displaceable on the upper surface of the body and

closing the channel, said lid member being provided on the underside thereof with at least one guiding projection for locating and slidingly guiding said projection engaging beneath a corresponding guiding portion of the body, and the clamping area being formed integrally with the lid member and



extending on both sides of the clamping projection while being spaced therefrom, said lid and said body having opposed finger engaging sections thereon for engagement by a thumb and one other finger to effect relative sliding movement of said body and said lid between clamping and non-clamping positions.

4,379,359

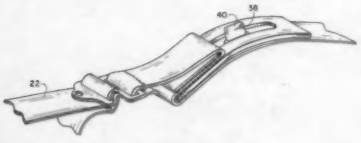
POSITIVE LOCK HOSE CLAMP

Donald L. Young, 2805 Hill Valley Dr., Escondido, Calif. 92025

Filed Feb. 2, 1981, Ser. No. 230,454

Int. Cl.³ B65D *63/10*

U.S. Cl. 24—273 **3 Claims**



1. A hose clamping strap for clamping a flexible hose to a cylindrical air supply conduit, comprising:

an elongated flexible woven fabric strap having a first end and a second end,

a friction buckle secured to said first end of said strap and adapted to receive said second end for establishing a loop of a selective size,

a toggle lever having a fixed end fixed to said strap at spaced points along said strap adjacent said first end, and a curved free end normally extending along said strap in a direction toward and substantially to said buckle and pivotal to extend in a second direction for removing slack from said strap and clamping said strap against a flexible hose, and

fastening means comprising a slot in the free end of said toggle lever, and a releasable twist fastener secured to said strap for extending through said slot and rotating to a securing position for releasably securing said free end of said toggle lever to said strap in a position extending in said second direction opposite said first direction.

4,379,360

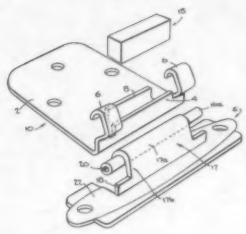
METHOD OF MAKING A HINGE WITH AN INTEGRAL PINTLE

John Papsdorf, Lake Orion, Mich., assignor to Liberty Hardware Manufacturing Corp., Long Island City, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,536

Int. Cl.³ E05D *11/10*

U.S. Cl. 29—11 **4 Claims**



1. A method of forming a male hinge member having a mounting base, substantially cylindrical pin means remote from said base, and neck means intermediate said base and said pin means, the end of said neck means most remote from said base being curled and forming a partial sleeve around said pin means, said method including the steps of:

(a) forming a flat sheet metal blank having a first portion adapted to be formed into said mounting base, a second portion remote from said first portion and adapted to be formed into said pin means, said second portion comprising an outer longitudinal edge and two inner longitudinal edges, said inner edges and the associated portions of said outer edge defining two projecting ends of said second portion, said outer edge having a surface lying in a plane perpendicular to the plane of said blank, and a third portion, intermediate and narrower than said first and second portions, connected to said second portion and adapted to be formed into said neck means;

(b) bending the outermost portion of said second portion so that the plane in which the surface of said outer longitudinal edge lies is rotated substantially 45° in a given direction of rotation with regard to the plane of the remainder of said second portion;

(c) bending the end of said third portion remote from said base substantially 90° in said given direction of rotation, thereby turning said second portion in its entirety approximately 90° further in said direction;

(d) curling said second portion with respect to itself so that said outer edge plane is rotated an additional angle of approximately 225° in said given direction of rotation, whereby said outer edge plane is brought into proximity to the region of the third portion at which the latter is connected to the second portion and said outer edge plane is substantially perpendicular to the plane of said third portion and whereby said second portion is formed into semi-cylindrical shape;

(e) shearing the upper inner longitudinal edge portions, of said semi-cylindrically-shaped second portion, from said third portion in the region of the respective boundaries of said upper inner edges and said third portion;

(f) swaging the inner longitudinal edge portions of said semi-cylindrically-shaped second portion so as to curl said inner longitudinal edge portions in such a direction as to form said projecting ends into substantially cylindrical shapes, thereby to form a longitudinally-extending pin having two substantially cylindrical end portions;

(g) curling said second and third portions, as a unit, further in said given direction of rotation approximately 45°, so as to form the end of said third portion most remote from said base into a sleeve extending partially about said pin;

(h) curling said sleeve and pin portions, as a unit, further in said given direction of rotation, an additional approximately 45° so that said sleeve portion extends approximately 180° around the periphery of said pin portion; and

(i) rolling said sleeve and pin portions, as a unit, in said given direction of rotation approximately an additional 90°, such that said outer edge plane has been rotated through an angle of approximately 540° from its starting position with respect to the plane of the uncurled end of said third portion and said sleeve portion extends around about three-quarters of the periphery of said pin portion;

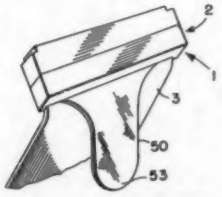
wherein step (d) comprises placing said outer edge in and along one longitudinal edge of a die groove having a substantially semi-circular cross-section and forcing said outer edge of said second portion further into said groove whereby said outer edge is forced to slide circumferentially around the inner surface of said groove so as to be curled into a substantially semi-cylindrical shape and wherein the longitudinal length of said groove is substantially greater than the longitudinal length of said outer edge and the outer edges of successive metal blanks are positioned along different longitudinal regions of said groove for said curling step, comprising the step of moving successive blanks to be formed to different longitudinal regions of said groove.

4,379,361

METHOD FOR MAKING MOLDED ELECTRICAL CONNECTOR

John L. Webster, Painesville, and John T. Venaleck, Mentor, both of Ohio, assignors to Chabin Corporation, Santa Clara, Calif.

Division of Ser. No. 74,978, Sep. 13, 1979. This application May 7, 1981, Ser. No. 261,587
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—857 **21 Claims**



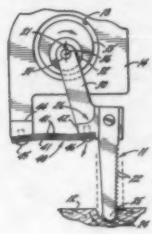
1. A method of making a cable termination assembly for a cable having at least one conductor and insulation covering at least a major extent thereof, comprising: sliding along a first length of insulation for ultimate removal from an end of the cable to expose a portion of the conductor, sliding a second length of insulation at least partly over the exposed conductor end leaving an intermediate portion of the conductor exposed between the second length of insulation and the major extent of the cable insulation, electrically connecting an electrically conductive member to the intermediate portion of the conductor to form a junction thereof, and enclosing the junction and the intermediate portion in a connector body while leaving a part of the electrically conductive member exposed for electrically connecting the conductor with an external device.

4,379,362

MOTION CONVERSION MECHANISM

Sidney A. Getts, 1923 N. Church St., Rockford, Ill. 61103

Continuation-in-part of Ser. No. 49,427, Jun. 18, 1979, Pat. No. 4,255,858. This application Feb. 5, 1981, Ser. No. 231,744
The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.
Int. Cl.³ B27B *19/09*
U.S. Cl. 30—393 **10 Claims**



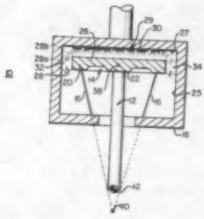
1. Mechanism for converting rotary motion to back and forth motion, said mechanism comprising a support, a power driven shaft mounted on said support to rotate about a predetermined axis, a driven member operably connected to said shaft, and means for causing said driven member to move back and forth in response to rotation of said shaft in one direction, said means comprising a resiliently yieldable strap connected between said support and said driven member and positioned to flex resiliently in the general direction of said back and forth motion thereby to dampen vibration of said driven member, said resiliently yieldable strap comprising a stack of leaf springs disposed in face-to-face relation, each of said springs having one end cantilevered on said support and having an opposite end connected to said driven member.

4,379,363

DAMPED REMOTE CENTER COMPLIANCE DEVICE

Daniel E. Whitney, Arlington, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Apr. 24, 1981, Ser. No. 257,220
Int. Cl.³ G01B *5/25*
U.S. Cl. 33—169 C **15 Claims**

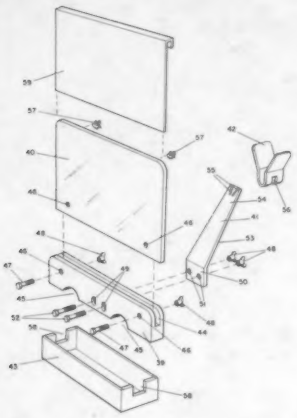


1. A damped remote center compliance system comprising:
mounting means;
a remote center compliance device including:
support means;
operator means interconnected with said support means;
a plurality of radial members extending between and attached to said support means at one end and said mounting means at the other end and having a focus at, near or beyond the free end of said operator means; and
damping means disposed between said mounting means and said remote center compliance device for suppressing vibrations in said remote center compliance device.

4,379,364
ARTIST'S FREEHAND SKETCHING DEVICE

Ivan L. Fish, 2804 Carolina NE., Albuquerque, N. Mex. 87110

Continuation-in-part of Ser. No. 173,288, Jul. 29, 1980, abandoned. This application Oct. 26, 1981, Ser. No. 315,164
Int. Cl.³ B43L *13/16*
U.S. Cl. 33—277 5 Claims



3. A device for use by artists and others to aid in free hand sketching comprising;

a baseboard being generally flat and rectangular having two arcuate notches along its bottom edge, and a groove along its top edge sized to accept a vertical member, and;

the vertical member, being transparent, and generally flat, and the vertical member being inserted into the groove, and the vertical member being secured to the baseboard by bolts and nuts, said bolts passing through matching bolt holes in the baseboard and the vertical member, and;

the baseboard having a plurality of vertical slots in its center, and;

a chin rest post having a foot region, a stem region and a slotted end wherein the foot region has a plurality of bolt holes matching the vertical slots in the baseboard so that the chin rest post may be adjustably affixed to the baseboard, and wherein the foot region is angled with respect to the stem region so that the stem region slopes upward and away from the vertical member, and wherein the slotted end has two slots which do not intersect each other but which angle toward each other forming generally a V without the vertex, and;

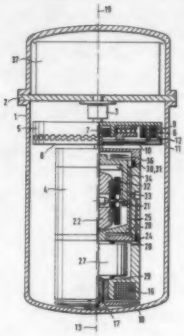
a removeable chin rest which slideably mates with the slotted end.

4,379,365
GYROCOMPASS

Heinz Riethmüller, Sandhausen; Rainer Sindlinger, Hirschberg, and Peter Schultz, Dielheim b. Heidelberg, all of Fed. Rep. of Germany, assignors to TELDIX GmbH, Heidelberg, Fed. Rep. of Germany

Filed Dec. 1, 1980, Ser. No. 211,788
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1979, 2948051
Int. Cl.³ G01C *19/38*
U.S. Cl. 33—316 32 Claims

1. In a gyrocompass including a first gimbal, a gyro motor mounted in the first gimbal and including a gyro rotor mounted to rotate about a horizontally alignable spin axis, a body in which the first gimbal is mounted to be rotatable about a vertically alignable axis of rotation, a housing in which the body is rotatably suspended, a verticality device associated with the body for allowing the body to assume an orientation in the housing in which the axis of rotation is vertical, and a follow-up device including a pickup mounted for sensing the angular position, about the axis of rotation, of the gimbal relative to the body and a drive connected for rotating the body relative to the housing about the axis of rotation in dependence

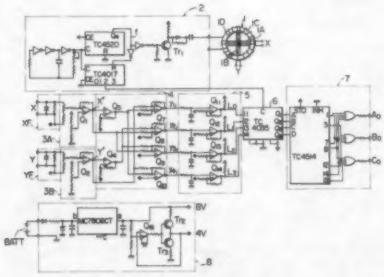


on the position sensed by the pickup, the improvement wherein said drive comprises a stepping motor constructed to rotate in highly uniform steps and simultaneously serving to provide an indication of the angular position of said body relative to said housing about said axis of rotation.

4,379,366
DIRECTION FINDING SYSTEM

Akira Kuno, Oobu; Muneaki Matsumoto, Okazaki, and Koji Numata, Toyokawa, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 24, 1981, Ser. No. 257,137
Claims priority, application Japan, Apr. 25, 1980, 55-55863
Int. Cl.³ G01C *17/30*
U.S. Cl. 33—361 9 Claims



1. A direction finding system comprising:

a terrestrial magnetism sensor for detecting two perpendicular components of the direction of the earth's magnetic field and generating two electric signals corresponding to the detected components; and

electronic means for generating a direction signal specifying one of 4N, where N is a positive integer, directions in accordance with the two electric signals from said terrestrial magnetism sensor, said electronic means producing 2N radialized boundaries representing signal components from said two electric signals to define 4N radialized regions, said electronic means including means for discriminating the signal components to discriminate to which region of said radialized regions said direction of the earth's magnetic field corresponds, and said electronic

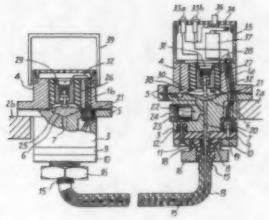
means including means for generating binary signals to specify the corresponding one region in dependence upon the discrimination of levels of said signal components.

4,379,367

ELECTRICALLY CONTROLLED LEVEL

Marcel Legris, Place de la Parette, Air Bel Bt 48, 13011 Marseille, France

Filed Dec. 31, 1980, Ser. No. 221,637
Int. Cl.³ G01C *5/04, 9/22*
U.S. Cl. 33—367 **2 Claims**



1. Apparatus for comparing the level of two spaced points, comprising a pair of vertically movable chambers, flexible conduit means of reduced section interconnecting the two chambers, reference means on each chamber adapted to come into contact with a said point whose level is to be compared, thereby to predetermine the position of said chamber relative to said point, said chambers and conduit containing mercury which is free to flow from chamber to chamber through said conduit, a flexible elastic diaphragm fixed about its periphery to the walls of each chamber, said diaphragm enclosing the mercury in the part of said chamber in which opens the flexible conduit along a substantially horizontal section of said chamber, said flexible elastic diaphragms flexing under the difference in the hydrostatic pressures resulting from the difference in the levels of the chambers relative to each other, electric means responsive to the direction of flexing of said diaphragms to determine which of said points with which said chambers are in contact by said reference means is at the higher level, and means permitting variation of the volume enclosed by said flexible diaphragms, said chambers and said flexible conduit means.

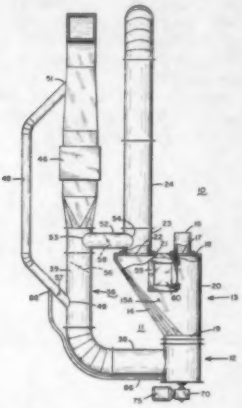
4,379,368

HOT AIR DRIER

A. Kent Keller, Mantorville, Minn., assignor to Whey Systems, Inc., Mantorville, Minn.

Filed Apr. 23, 1981, Ser. No. 256,848
Int. Cl.³ F26B *17/10*
U.S. Cl. 34—57 R **20 Claims**

1. A hot air drier for particles and aggregates of moist solids utilizing the upward movement of heated air at a volume rate sufficient to lift partially dried solids of desired particle size through a upwardly expanding cross section chamber and yet insufficient to lift particles of all moisture contents and sizes through the expanding cross section chamber and thereby dropping oversized and undesirably moist aggregates back down through such chamber for further disintegration and drying, said drier comprising a body portion having a bottom air inlet opening, a top wall spaced above the bottom air inlet opening, a moist solids inlet opening directly above the air inlet opening, and body side wall portions extending upwardly from the edges of the bottom opening to the top wall and including at least one sloping side wall portion extending upwardly and outwardly from the bottom opening to an area of the top wall spaced laterally outwardly from the solids inlet opening, thereby defining a drying chamber of upwardly expanding cross section from the air inlet opening to the top wall, said chamber having an upper portion with a solids outlet opening at a location laterally outwardly-spaced, from the moist solids inlet opening and the air inlet opening, a pneumatic conveying conduit extending from the solids outlet opening for conveying selected solids from the upper portion of the drying chamber, when they have reached the desired dryness and particle size, blower means for maintaining a primary flow of heated drying air upwardly through the bottom air inlet, drying chamber, and solids outlet opening and through the conveying conduit at a volume rate providing lateral lifting of at least partially



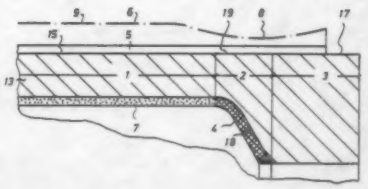
dried and separated solids upwardly through the chamber and outwardly through the solids outlet opening and dropping of undesirably moist and unseparated solids down through the chamber toward the air inlet opening for further drying and particle separation by the heated air entering that opening, said drier also having a rake member movable across said air inlet opening within the chamber for engaging and breaking up dropped solids into particles suitable for air lifting to the solids outlet, and means for moving the rake member across the said air inlet opening while the drier is operating.

4,379,369

DRYING CYLINDER FOR MACHINES FOR MAKING PAPER AND A METHOD FOR MAKING THE DRYING CYLINDER

Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jun. 18, 1981, Ser. No. 274,715
Int. Cl.³ F26B *13/18*
U.S. Cl. 34—110 **6 Claims**



1. A steam heating drying cylinder for machines for making paper comprising:

a cylindrical shell having inner surfaces thereon, said cylindrical shell comprising a center region of substantially uniform thickness having inner surfaces thereon, end flanges extending radially inwardly of said center region

and having inner surfaces thereon, and transition regions being disposed between said center region and said end flanges, said transition regions having inner surfaces that taper radially outwardly from said end flanges toward said center region, and

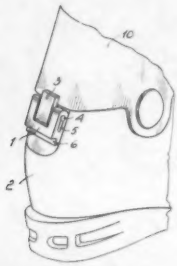
an insulation layer being disposed on said inner surfaces of said transition regions for providing substantially uniform drying along the width of the paper being made.

4,379,370

DEVICE FOR ADJUSTING THE INCLINATION OF THE CUFF OR ANKLE COVERING PORTION OF A FOOTWEAR ARTICLE, IN PARTICULAR A SKI BOOT

Renzo Balbinot, Vittorio Veneto, Italy, assignor to Nordica S.p.A., Montebelluna, Italy

Filed May 4, 1981, Ser. No. 260,154
Claims priority, application Italy, May 23, 1980, 21894/80[U]
Int. Cl.[3] A43B *5/04*
U.S. Cl. 36—121 3 Claims



1. A device for adjusting inclination of a cuff, particularly on a ski boot, comprising an abutment block for engagement with a shell of the boot, said abutment block having an abutment surface for said cuff such as to determine the inclination between said cuff and said shell in a rest position of said cuff, and further comprising a serrated protrusion on said shell, a serration on said abutment block for cooperation with said serrated protrusion, a longitudinal throughgoing slot in said abutment block, a pin projecting outwardly from said shell at the region of said serrated protrusion and extending through said longitudinal slot, a threaded region on said pin, and a tightening ring nut for cooperation with said threaded region for tightening said abutment block against said shell at selected different height levels.

4,379,371

TRACK SKELETONIZER

Allan D. Jenkins, Maple Plain; John T. Appelen, Mound, and Nils Lind, Minnetonka, all of Minn., assignors to Railway Track-Work Company, Excelsior, Minn.

Filed May 23, 1980, Ser. No. 245,348
Int. Cl.[3] E02F *5/22*
U.S. Cl. 37—104 42 Claims

1. Apparatus for performing work on a railway roadbed comprising:

a mobile support framework;

a front truck and a rear truck, each of said trucks rotatably supporting wheels for riding on rails of a railway track;

means for connecting each truck to said framework;

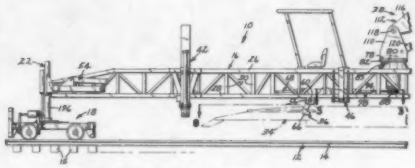
rail hook means carried by said framework for selectively connecting said framework with the rails upon which said wheels are riding;

means carried by said framework for raising said framework and a section of rail connected to said framework by said rail hook means with respect to the ground;

a roadbed working tool;

suspension means carried by said framework for selectively suspending said tool from said framework;

motor means for moving said suspension means between a tool supporting position wherein said tool is suspended from said framework and a release position wherein said tool is free to drop from said framework;



powered handling boom means supported by said framework for moving said tool with respect to said framework after said tool has been released from said framework by said suspension means; and

adjusting means for moving each of said trucks laterally with respect to the lengthwise dimension of said framework.

4,379,372

PLANT TAG

Lee J. Alexander, Plano; Harold E. Vanberg, and Clyde E. King, both of Dallas, all of Tex., assignors to Horticultural Printers/Carscallen Nursery Label Company, Dallas, Tex.

Filed Dec. 8, 1981, Ser. No. 328,510
Int. Cl.[3] G09F *3/18, 3/08*
U.S. Cl. 40—10 C 15 Claims

1. A plant tag for use on a plant comprising:

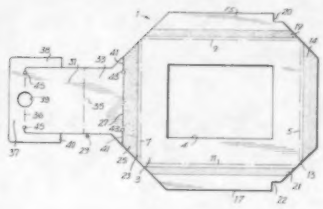
a resilient portion having first and second nonoverlapping holes formed therethrough with nonlinear cuts extending from the edge of each of the holes, the resilient portion being foldable along a predetermined line between the first and second holes to align the holes, the cuts extending from each of the holes to an edge of the resilient portion, the resilient portion permitting placement of the tag on the plant by separating the edges of the cuts for passage of the plant into the first and second holes, the resilient portion resiliently unfolding after placement on the plant until the portion of the edge of each of said first and second holes adjacent to the predetermined line contacts one side of the plant and the portion of the edge of each of said first and second holes distal the predetermined line contacts the opposite side of the plant to lock the tag on the plant and maintaining the tag in a fixed position on the plant for facilitating observation, the cuts being nonaligned to lock the tag on the plant.

4,379,373

DISPLAY DEVICE HAVING A COLLAPSIBLE EASEL

Felix Transport, 98 Riverside Dr., New York, N.Y. 10024

Filed May 19, 1981, Ser. No. 265,106
Int. Cl.³ G09F 1/12
U.S. Cl. 40—152.1 9 Claims



1. A display device supportable at a predetermined angle to a horizontal surface having a collapsible easel comprising:

a guide panel slidably engaging said display device;

a support panel having first and second edges, said first edge hinged to said guide panel; and

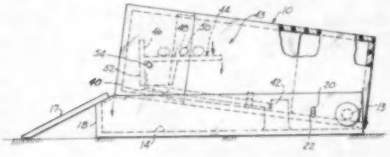
a stay panel having first and second edges, the first edge of said stay panel hinged to said second edge of said support panel and said second edge of said stay panel hinged to said display device.

4,379,374

RODENT TRAP

Donald C. Lindley, Irvine, Calif., assignor to Contectrol Incorporated, Costa Mesa, Calif.

Filed Aug. 11, 1980, Ser. No. 176,768
Int. Cl.³ A01M 23/18
U.S. Cl. 43—61 8 Claims



1. A rodent trap comprising:

a base;

an enclosure including a top, a bottom, and a peripheral side wall that forms an end face with a doorway through it, hingedly mounted to said base for angularly tilting movement relative thereto, said enclosure being angularly movable between a ready position tilted relative to said base with the doorway open and a closed position closer to said base with the doorway closed, said hinged mounting being disposed adjacent to the end of said enclosure farthest removed from said end face;

closure means adapted at least partially to occlude said doorway when the enclosure is in said closed position;

latch means interposed between said enclosure and said base, adapted to hold said enclosure in said ready position, said latch means comprising a post rising from said base through the bottom of said enclosure to form a stop, a latch arm extending along the bottom of said enclosure movable to a first position on and a second position off of said stop to support said enclosure in said ready position and to allow it to lower to the said closed position, respectively, and bias means biasing said latch arm toward said first position; and

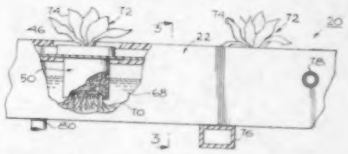
trigger means inside said enclosure adapted to receive a bait, said trigger means being linked to said latch arm to move said latch arm from its first to its second said position whereby to permit the enclosure to tilt downwardly to said closed position as a consequence of its weight plus the weight of the rodent, whereupon said closure means at least partially occludes said doorway, trapping the rodent and suffocating it, said trigger means comprising a shelf pivotally supported in said enclosure, and means connecting said trigger means to said latch arm.

4,379,375

HYDROPONIC GROWING SYSTEM AND METHOD

Steven K. Eisenberg, Simi, and Mark W. Hancock, Los Angeles, both of Calif., assignors to Whittaker Corporation, Los Angeles, Calif.

Filed Mar. 19, 1981, Ser. No. 245,557
Int. Cl.³ A01G 31/02
U.S. Cl. 47—65 17 Claims



1. An improved hydroponic growing system, said system comprising, in combination:

a. an elongated hollow trough having substantially closed sidewalls and bottom and an open top defining a central space, said trough defining a pair of spaced horizontal tracks extending into said space along the length thereof;

b. an elongated flexible strip horizontally slideably disposed in said tracks and defining spaced apertures extending vertically therethrough along the length thereof;

c. a plurality of plant growing cups, each said cup comprising a hollow body having a central space, an open top, a porous bottom and substantially closed sidewalls, said sidewalls bearing peripherally outwardly extending support means, each of said cups being disposed in a different one of said apertures with said body extending downwardly into said trough space below said strip and with said cup support means releasably securing said cup to said strip.

4,379,376

UNIVERSAL EDGE GUARD

Robert Adell, Novi, Mich., assignor to U.S. Product Development Company, Novi, Mich.

Filed Nov. 23, 1981, Ser. No. 323,512
Int. Cl.³ B60J 5/00
U.S. Cl. 49—462 15 Claims

1. In an edge guard of the type comprising a metal strip formed into a generally U-shaped cross section having inner and outer legs and beads at the distal ends of the legs via which

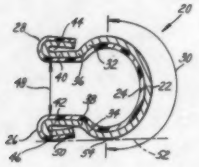
the edge guard is self-retained on the edge of an object when installed thereon, the improvement wherein the U-shaped cross section has a generally semi-circularly contoured base and includes inward offsets joining the ends of the base with each bead so that the beads are disposed in inwardly off-set relation to the diametrically opposite ends of the generally semi-circularly contoured base and including a pattern of notches spaced at intervals along the length of the inner leg, said notches extending from the distal end of the inner leg, along the inner leg, and into the generally semi-circular base.

4,379,377

EDGE GUARD

Robert Adell, Sunnyvale, Tex., assignor to U.S. Product Development Company, Novi, Mich.

Filed Nov. 23, 1981, Ser. No. 323,513
Int. Cl.³ B60J 5/00
U.S. Cl. 49—462 **12 Claims**



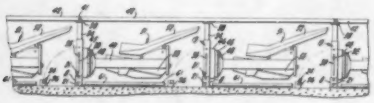
1. In an edge guard of the type comprising a metal strip formed into a generally U-shaped cross section having inner and outer legs and beads at the distal ends of the legs via which the edge guard is self-retained on the edge of an object when installed thereon, the improvement wherein the U-shaped cross section has a generally semi-circularly contoured base and includes inward offsets joining the ends of the base with each bead so that the beads are disposed in inwardly offset relation to the diametrically opposite ends of the generally semi-circularly contoured base.

4,379,378

AUDITORIUM CONVERTIBLE FLOOR

Norman C. McMahan, 3976 Black Oak Dr., Shingle Springs, Calif. 95682

Filed Apr. 6, 1981, Ser. No. 251,639
Int. Cl.³ E04N 3/12
U.S. Cl. 52—9 **9 Claims**



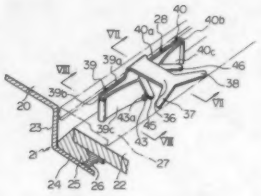
1. An auditorium convertible floor comprising a sub-structure, a base on said sub-structure, a column, means for pivoting said column on said base to move relative to said base between a horizontal position and a vertical position, means for holding said column in said vertical position, a theatre chair having a frame movable between a horizontal position and a vertical position, means for securing said frame and said column together with said column extending above said theatre chair when said column is in said vertical position and said chair is in said horizontal position, a floor support, means for interconnecting said floor support and said column, and a floor section adapted to interengage said floor support.

4,379,379

DEVICE FOR FIXING A WINDOW MOLDING ONTO A WINDOWPANE

Ikuo Sengoku, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 3, 1981, Ser. No. 250,679
Claims priority, application Japan, Nov. 5, 1980, 55-154570
Int. Cl.³ E04F 19/02
U.S. Cl. 52—208 **18 Claims**



1. A windowpane assembly of a vehicle, which has a window molding and a windowpane arranged in an L-shaped cross-sectional fillister of a vehicle body, said fillister extending along an outer periphery of the windowpane and comprising a riser portion which extends inwardly from the vehicle body, and a bottom portion which extends substantially parallel to the vehicle body from an inner end of said riser portion, the windowpane being stuck onto the bottom portion by means of an adhesive material, a gap formed between the riser portion and the outer periphery of the windowpane being covered by the window molding which has a substantially C-shaped cross-section, said device having a molding clip inserted into the gap for fixing the window molding onto the windowpane, said molding clip comprising:

a holding portion engageable with the C-shaped cross-section of said window molding;

a central base portion connected to said holding portion and extending substantially perpendicular to said holding portion towards the bottom portion of said fillister;

a pair of V-shaped elastic wings intended to resiliently abut against the outer periphery of said windowpane within said gap and extending outwardly from said central base portion in opposite directions, each of said elastic wings comprising a first wing portion which extends outwardly from said central base portion along the riser portion of said fillister and has an outermost end, and a second wing portion which extends inwardly from said outermost end;

latch means arranged on said second wing portions and being engageable with said central base portion for maintaining said elastic wings in a compressed state to accumulate the elastic force of said elastic wings, and;

disengaging means for disengaging said latch means from said central base portion and causing said elastic wings to resiliently abut against the outer periphery of said windowpane.

4,379,380

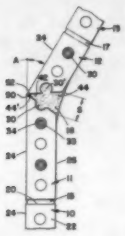
METHOD OF CONSTRUCTING ANGLED BRICK PANELS

William H. Vetovitz, 8174 Strongsville Blvd., Strongsville, Ohio 44136

Filed Feb. 2, 1981, Ser. No. 230,318
Int. Cl.³ E04B 1/54
U.S. Cl. 52—259 **12 Claims**

1. A method of joining a pair of bricks so as to have outer surfaces disposed at a predetermined surface angle to each other comprising the steps of: beveling the end of at least one of the bricks at an angle such that when said bricks are positioned relative to each other at the predetermined angle with the outer corners in contact, the inner corners will be spaced a

distance of approximately 1¼ to 2¼ inches with the maximum bevel angle on any one brick not exceeding about 55°; positioning said bricks with their outer surfaces disposed at said predetermined angle facing downwardly with their outer corners in abutting engagement to define an upwardly facing V-shaped notch; filling said V-shaped notch with a cement; and allowing said cement to harden.

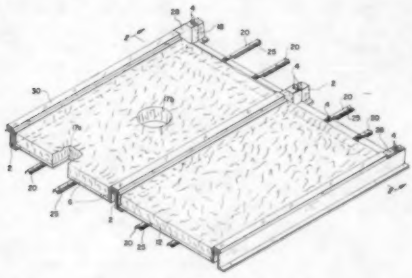


4,379,381

ROOF INSULATION SYSTEM

J. L. Holcombe, Dallas, Tex., assignor to Emerson H. Mizell, Atlanta, Ga.

Filed Jun. 5, 1980, Ser. No. 156,606
Int. Cl.³ E04B *2/28, 2/60;* E04F *21/00*
U.S. Cl. 52—404 **7 Claims**



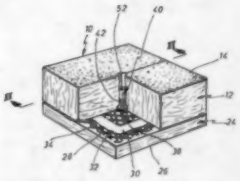
1. An insulation system comprising:
(a) spaced roof joists having length and side and top surfaces;
(b) support structures located between and supported by said roof joists;
(c) a semi-rigid insulation blanket overlying said support structures and said roof joists;
(d) said semi-rigid insulation blanket having front, back and side surfaces and length and width;
(e) said semi-rigid insulation blanket having a vapor barrier on said back surface and between said support structure and said insulation blanket;
(f) said semi-rigid insulation blanket having a series of predetermined recesses cut into said front surface;
(g) said predetermined recesses providing hinges for laying said insulating blanket over said support structure and roof joists;
(h) approximately U-shaped trough areas formed by said insulation blanket between some of said predetermined recesses;
(i) a series of said blankets in side-by-side relationship with the widths of said blankets running approximately parallel to the lengths of said roof joists;
(j) insulation material contained within and generally filling said trough areas;
(k) said support structure including main support brackets and longitudinal support brackets;
(l) said main support brackets being generally U-shaped and having base, side and flange portions;
(m) said base of said support bracket being positioned between and transverse to said roof purlins;
(n) said side portions extending vertically upward from said base of said support bracket;
(o) said flange portions being attached to the upper end of said sides and being connected to said roof purlins;
(p) said base of said main support bracket having length, two sides and a downwardly projecting stacking flange on both sides and running the length of said base;
(q) said longitudinal support brackets being of one continuous piece and having length, two sides and two edges;
(r) said two ends of said longitudinal support bracket having connecting means;
(s) said longitudinal support brackets having downwardly projecting stacking flanges on both sides and running almost the length of said longitudinal support bracket; and,
(t) said longitudinal support brackets being connected to said base of said main support brackets and being generally parallel to the length of said roof joists.

4,379,382

METHOD AND APPARATUS FOR INSULATING A FURNACE HAVING A CORROSIVE ATMOSPHERE

Robert A. Sauder, Emporia, Kans., assignor to Sauder Industries, Inc., Emporia, Kans.

Filed Jun. 2, 1980, Ser. No. 155,173
Int. Cl.³ F27D *1/00;* C04B *43/02;* B23P *21/00;* E04B *1/80*
U.S. Cl. 52—506 **19 Claims**



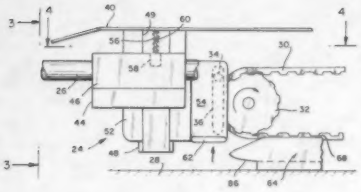
1. A high temperature insulation module for use in a chamber containing a corrosive atmosphere, comprising:
a first ceramic fiber mat, the first mat having a hot face adapted for exposure to the interior of a high temperature chamber, the first mat having a thickness, the first mat having a rear face generally opposite from the hot face;
a support member, the support member being disposed against the rear face of the first mat, the support member being displaced from the hot face of the first mat by at least the thickness of the first mat to protect the support member from excessive heat;
a second ceramic fiber mat, the second mat having a front face disposed against the support member, the second mat having a thickness, the second mat having a cold face generally opposite from the front face, the second mat being adapted to maintain the support member in a region displaced from the cold face by at least the thickness of the second mat; and,
the first mat, the support member and the second mat forming a module, the support member being positioned between the first mat and the second mat and being displaced from the cold face in a zone of the module where the temperature at the zone during operation of the chamber will generally be too high for corrosive gases and water vapor to condense.

4,379,383

INSERTER WITH IMPROVED RAM MECHANISM

William Adamoski, Stamford, and Alan B. Hotchkiss, Westport, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 11, 1980, Ser. No. 185,856
Int. Cl.³ B65B 5/04, 35/20
U.S. Cl. 53—266 A 2 Claims



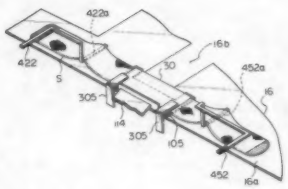
1. In an envelope inserter having an enclosure pick-up station, means for delivering enclosures to the pick-up station, an envelope station, means for delivering envelopes to the envelope station, ram means including a ram blade and a ram block, means for moving the ram means from a home station in front of the pick-up station to the envelope station on a forward stroke and back to the home station on a return stroke, the moving means including guide means and drive means, the improvement comprising: means for returning said ram means in a path which extends in a plane other than the plane of the forward stroke and other than that of the pick-up station, said returning means including means interconnecting the ram block and guide means, the interconnecting means including a carriage, said returning means including means securing the ram block to the carriage for vertical movement relative to the carriage, the means securing the ram block to the carriage for vertical movement including means forming a sliding dovetail engagement between the ram block and the carriage and including a spring for urging the ram blade to an uppermost elevation relative to the carriage, the guide means extending between the home station and the envelope station at a fixed elevation, said ram block having a portion thereof extending towards the drive means, said portion having a slot formed therein, said drive means including a pin extending into said slot and engaging said portion for forward and return movement of the ram means, said pin limiting vertical movement of the ram block, said portion having follower means extending therefrom, camming means mounted along the path of said ram means for engagement by the follower means, the camming means including a first camming surface, the follower means engaging the first camming surface on the forward stroke, the camming means including a second camming surface, the second camming surface being at an elevation below that of the first camming surface, the follower means engaging the second camming surface during the return stroke, means guiding the follower means between the first and second camming surfaces, the follower guiding means comprising a latch hinged to the camming means and extending forwardly thereof, the follower means engaging the upper surface of the latch on the forward stroke, the follower means being disengaged from the latch when the ram means is at the envelope station, the latch varying its position in response to disengagement of the follower means, and the follower means engaging the undersurface of the latch and being cammed thereby into engagement with the second camming surface on the return stroke, whereby a successive enclosure may be loaded into the pick-up station prior to the completion of the return stroke.

4,379,384

METHOD AND APPARATUS FOR AUTOMATICALLY PACKAGING STOCKINGS

Masao Nishikawa, Nara, Japan, assignor to Takatori Machinery Works Ltd., Japan

Filed Sep. 10, 1980, Ser. No. 185,630
Claims priority, application Japan, Sep. 12, 1979, 54-117585; Oct. 11, 1979, 54-132213; Jun. 7, 1980, 55-76937
Int. Cl.³ B65B 9/08, 63/04
U.S. Cl. 53—415 12 Claims



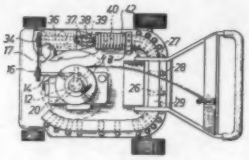
1. A method for automatically packaging stockings using an apparatus having a setting station arranged adjacent one side of an operation table and an enclosing station arranged on said operation table at a position downstream to and substantially coplanar with said setting station, said method comprising the steps of receiving at said setting station a pair of stockings on a horizontal transfer plate of a transfer assembly arranged on said operation table and provided with a transfer gripping plate; delivering an insert from a supply thereof using an insert feeding assembly arranged on said operation table facing said setting station and feeding same onto said stockings at a position overlying said transfer plate; provisionally fixing at said setting station the position of said stockings and insert relative to said transfer plate using an insert gripping plate of an insert gripping assembly arranged adjacent to said transfer assembly; concurrently folding waist and toe end sections of said stockings around said insert being gripped by said insert gripping plate using a stockings folding assembly arranged on said operation table facing said setting station; feeding an envelope to said enclosing station using an envelope feeding assembly arranged on said operation table; transferring said stocking with said insert to a conveyor assembly by horizontally reciprocating said transfer assembly between said setting station and the upstream terminal of said conveyor assembly; conveying said stockings folded around said insert towards said enclosing station using said conveyor assembly arranged on said operation table and provided with a conveyor gripping plate; enclosing said stockings with said insert in said envelope using a stockings enclosing assembly arranged on said operation table facing said enclosing station and provided with an encloser for gripping said stockings folded around said insert; said step of transferring said stockings with said insert to said conveyor assembly is accomplished by said transfer gripping plate taking over the gripping of said stockings and insert from said insert gripping plate and said conveyor gripping plate taking over the gripping of said stockings and insert from said transfer gripping plate; and conveying said stockings and said insert to said stocking enclosing assembly by said encloser taking over the gripping of said stockings and insert from said conveyor gripping plate so that said stockings and insert are continuously gripped while being transferred from said setting station to said enclosing station.

4,379,385

COMPACTION APPARATUS FOR USE WITH LAWN GROOMING EQUIPMENT

Ulf Reinhall, 834 171st Pl., NE., Bellevue, Wash. 98008

Filed May 20, 1981, Ser. No. 265,645
Claims priority, application Sweden, Oct. 6, 1980, 8006979
Int. Cl.³ A01D *35/22*
U.S. Cl. 56—16.6 12 Claims



1. In lawn grooming equipment in which lawn grooming means are mounted within a main body adapted to be moved over the surface to be groomed, which grooming means are driven to generate a flow of refuse material picked up from the lawn into a compacting device connected to said main body, said compacting device comprising a conveyor which rotates within a housing to convey the refuse material from a material inlet end to a material outlet end therein, the improvement comprising:

(a) a conveyor housing surrounding a solid type compacting screw conveyor rotating therein to convey the refuse material while compressing it progressively therein as it is advanced through said housing from said material inlet to said material outlet end;

(b) perforations in the wall of said conveyor housing for evacuating accompanying air and moisture from the refuse material during the compression step; and

(c) a tubular casing extensibly connected to the outlet opening of said conveyor housing for receiving the initially compacted refuse material and allowing it to expand against the tubular wall thereof to plug one end thereof and thus cause the casing and the enclosed compacted refuse material to advance like a sausage from said outlet end under the force of the continuous advancement of refuse material from said conveyor housing.

4,379,386

APPARATUS FOR INTERRUPTING THE SLIVER SUPPLY IN OPEN-END SPINNING APPARATUS

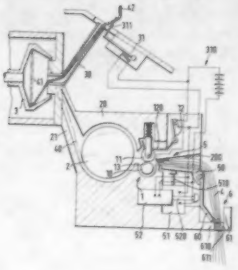
Georg Goldammer, Gaimersheim, and Ludwig Schmitt, Manching, both of Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Mar. 11, 1981, Ser. No. 242,645
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1980, 3010303
Int. Cl.³ D01H *13/18, 7/882*
U.S. Cl. 57—405 8 Claims

1. Apparatus for interrupting the sliver supply in an open-end spinning machine which includes an opening device, a sliver delivery device, a first sliver clamp associated with said sliver delivery device, means including a yarn monitor or a lap monitor when a supply roller continues to run for actuating said sliver clamp, comprising:

a second sliver clamp means actuatable simultaneously with said first sliver clamp for clamping said sliver;

said second sliver clamp means being arranged before said sliver delivery device in the transport direction at a distance which is at least as large as the average fiber staple length.

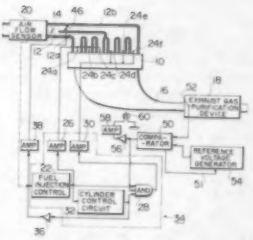


4,379,387

CYLINDER CONTROL SYSTEM FOR MULTICYLINDER COMBUSTION ENGINE

Haruhiko Iizuka, and Fukashi Sugasawa, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 21, 1979, Ser. No. 96,460
Claims priority, application Japan, Dec. 6, 1978, 53-151444
Int. Cl.³ F01N *3/20;* F02D *17/00*
U.S. Cl. 60—277 6 Claims



1. A cylinder control system for a multicylinder internal combustion engine with an exhaust gas purification device for purifying the exhaust from the cylinders, the cylinders forming at least a first and a second group of cylinders, each of the groups having at least one fuel injection valve controlled independently of the fuel injection valves for other groups, the air supply to the first group being controlled by a first throttle valve, the air supply to the second group being controlled by the first and second throttle valves, the cylinder control system comprising:

(a) air flow sensor means for measuring the air flow through the first throttle valve and generating an air flow signal indicative thereof;

(b) Fuel injection control circuit means responsive to said air flow signal to generate a fuel injection signal indicative of a quantity of fuel to be injected;

(c) cylinder control circuit means responsive to said fuel injection signal to generate a control signal when said fuel injection signal falls below a predetermined value, said second throttle responding to said control signal to interrupt the supply of air to the second group;

(d) detector means for sensing the temperature of the exhaust purification device and generating a first signal indicative thereof;

(e) comparator means for comparing said first signal to a first

reference value representative of a predetermined temperature value above which the purification device may be damaged by heat and for generating a second signal when said first signal exceeds said first reference value; and

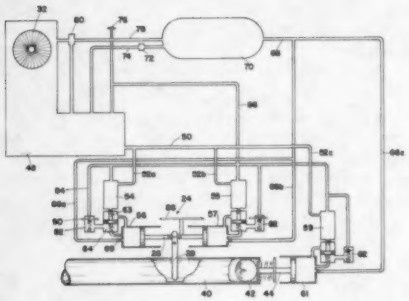
(f) gate means responsive to said control signal and the absence of said second signal for gating said fuel injection signal to said at least one fuel injection valve of said second cylinder group.

4,379,388

OCEAN RAFT ENERGY GENERATOR

Byrl L. Williamson, and Betty Williamson, both of c/o Good Sam Club P.O. Box 404, Agoura, Calif. 91301

Filed Mar. 27, 1981, Ser. No. 248,514
Int. Cl.³ F16D *31/02*
U.S. Cl. 60—398 **6 Claims**



1. A system for generating energy comprising:

a hollow flotation raft;

at least one raceway of arcuate cross-section in said raft;

a heavy metal ball in each said raceway to roll therealong in either direction in response to movement of said raft on the sea;

a hydraulic system; and

a prime mover driven by pressurized liquid in said hydraulic system;

said hydraulic system comprising:

at least one pair of aligned cylinders along each raceway disposed with their heads at opposite ends;

a pair of pistons slidable in said cylinder;

a push rod interconnecting said pistons;

a pivoted lever connected to said push rod and extending into the path of travel with a ball on said raceway so that engagement of said lever by said ball rolling in opposite directions will reciprocate said interconnected pistons;

a pressure tank;

supply conduits connected between the closed ends of said cylinders and said pressure tanks;

a delivery conduit opening from said pressure tank for delivery of pressurized fluid to said prime mover;

a reservoir for hydraulic fluid positioned above said cylinders;

an accumulator chamber connected between said reservoir and each of said cylinders to ensure a ready supply of fluid thereto; and

a float-operated, one-way check valve below said chamber and above said cylinder to open for flow to said cylinder in the event of any fluid insufficiency therein;

a vent line connecting the head of each said cylinder to atmosphere;

a valve member normally closing off said vent line; and

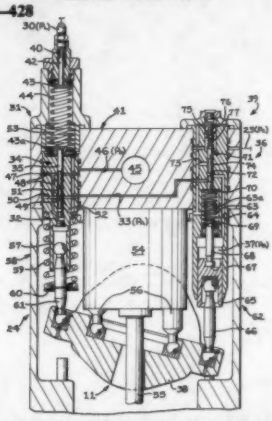
means on said push rod for opening said valve member at the end of a pressure stroke of each piston.

4,379,389

HORSEPOWER CONSUMPTION CONTROL FOR VARIABLE DISPLACEMENT PUMPS

Kenneth P. Liesener, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01194, § 371 Date Sep. 12, 1980, § 102(e) Date Sep. 12, 1980, PCT Pub. No. WO82/01046, PCT Pub Date Apr. 1, 1982
This PCT application filed Sep. 12, 1980, Ser. No. 261,098
Int. Cl.³ F16D *31/02*
U.S. Cl. 60—428 **6 Claims**



6. A fluid circuit (**10**) having a plurality of fluid motors (**13**), a variable displacement pump (**11**) having a discharge pressure (P_D), connected to each of said motors (**13**) and including a control member (**38**) movable between first and second displacement positions, first biasing means (**58**) for urging said control member (**38**) towards its first displacement position, second biasing means (**62**) for urging said control member (**38**) towards its second displacement position in response to an actuator pressure signal (P_A) communicated thereto from said pump (**11**), and means (**34**) for modulating said actuator pressure signal (P_A) in response to variations in a load pressure signal (P_L) communicated thereto from a respective one of said fluid motors (**13**) during a predetermined range of horsepower consumption of said pump (**11**), horsepower limiting means (**39**) for blocking communication of said actuator pressure signal (P_A) with said second biasing means (**62**) and for venting said actuator pressure signal (P_A) from said second biasing means (**62**) in response to a pressure control signal (P_C) which is responsive to said pump discharge pressure (P_D) indicating that said pump (**11**) has exceeded said predetermined range of horsepower consumption and summing means (**22**) for modulating said pressure control signal (P_C) in response to the average fluid discharge pressures (P_D) of said pumps (**11**).

4,379,390

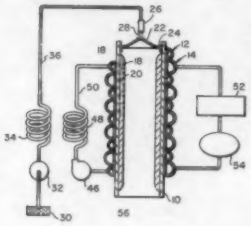
ICE-MAKING EVAPORATOR

Edward W. Bottum, 9357 Spencer Rd., Brighton, Mich. 48116

Filed Feb. 28, 1977, Ser. No. 772,539
Int. Cl.³ F25C *5/08*
U.S. Cl. 62—354 **2 Claims**

1. An ice-making evaporator comprising an elongated hollow tubular member having an outer surface and inner surface and having a bottom end and a top end wherein the bottom end is adapted to be installed lower than the top end, said bottom end of the tubular member being completely open, a baffle covering part of the top end of the hollow tubular member for directing water passed into the top end of the tubular member toward the sides thereof and permitting free flow of water through the baffle to the sides of the tubular member from the top end thereof toward the bottom end thereof on the inner surface thereof, a relatively soft metallic helical tubular coil for

the member, said coil having flattened surface portions of substantial area fluid-pressure expanded in pressure contact with the outer surface of the tubular member, one end of the coil being a fluid inlet and the other end of the coil being a fluid outlet, whereby water sprayed onto the baffle at the upper end of the hollow tubular member may be frozen as it progresses from the top end of the tubular member toward the bottom end of the tubular member for subsequent removal from the bottom end of the tubular member as ice, the coil having a plurality of convolutions in spaced apart relation axially of the hollow



tubular member, and further including a second helical tubular coil having convolutions alternating with that of the first tubular coil, which second coil also has flattened surface portions of substantially fluid pressure expanded in pressure contact with the tubular member with one end portion of the second coil also being a fluid inlet and the other end of the second coil being a fluid outlet whereby ice formed on the inner surface of the hollow tubular member may be released therefrom for subsequent removal from the bottom end of the tubular member by gravity on passing of a heated substance through said second coil.

4,379,391

REFRIGERATOR

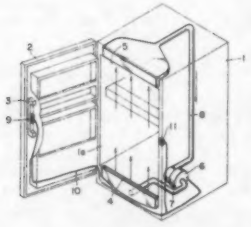
Jae W. Rhee, 369-7 Sukyo-Dong, Mapo-ku, Seoul, Rep. of Korea

Filed Jun. 4, 1981, Ser. No. 270,353

Claims priority, application Rep. of Korea, Jun. 5, 1980, 3614/80

Int. Cl.³ F25D *17/04*

U.S. Cl. 62—408 **4 Claims**



1. A refrigerator comprising a refrigerator body, a door fitted to said refrigerator body so as to be able to be opened and closed, at least one set of an air jetting port and air sucking port provided opposed to each other in the opening of the refrigerator body to form an air curtain in said opening when said door is opened, a blower arranged within said body and connected on the blowing side to said air jetting port and on the second side to said air sucking port, a normally open first switch means fitted to the handle of said door and closed to start said blower when said handle is gripped by a hand to open said door, and a second switch means fitted to said body and connected in parallel with said first switch and closed to drive said blower when said door is opened.

4,379,392

APPARATUS FOR STEAMING PRINTED FABRICS

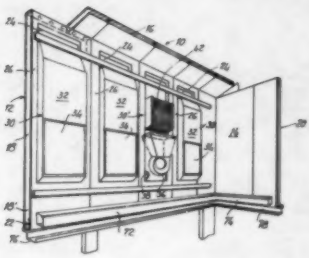
Sergio Centis, Gerenzano, Italy, assignor to Arioli & C.S.r.l., Gerenzano, Italy

Filed Sep. 24, 1980, Ser. No. 190,213

Claims priority, application Italy, Oct. 1, 1979, 26160 A/79

Int. Cl.³ D06B *3/30*

U.S. Cl. 68—5 C **11 Claims**



1. In an apparatus for treating printed fabrics in which air is circulated and at least a portion of the circulating air circulates between intermediate levels with respect to the height of the treating chamber, the improvement which comprises a double wall static structure, constituting the treating environment, said structure defining in the interior thereof a chamber opened at the bottom, having a saddle roof (**10**), double vertical side walls (**12**) and double vertical front wall (**14**), gaps formed by said double walls (**16, 18, 20**), perforated ducts (**22**) for emitting steam into a water pool at the base of said gaps in the vertical side walls and vertical front walls to the top of said chamber under said saddle roof, ports (**28**) in said saddle roof for introducing said steam from the top to the bottom into said treating environment, at least one operating assembly located in at least a portion of the side walls of the static structure, means for introducing air at the base of said operating assembly, said operating assembly including mechanical means effective to cause the air to circulate through a circuit looped through said operating assembly, said assembly including radiator means (**42**) for applying thermal energy to the air circulating through said circuit, and a supply system adapted to supply selectively liquid and/or gaseous substances and power means effective to supply said radiator means with thermal energy, said supply system being effective to be put in an operative or inoperative position to selectively set said apparatus to operate, by saturated steam or superheated steam, or by hot air.

4,379,393

LOCK FOR OPEN FRAME VEHICLES

Roger A. Schott, Redford, and Lawrence A. Schott, Detroit, both of Mich., assignors to Freedom Industries, Inc., Redford, Mich.

Filed Mar. 16, 1981, Ser. No. 243,997

Int. Cl.³ B62H *5/00;* **E05B** *71/00, 73/00;* **F16G** *11/00*

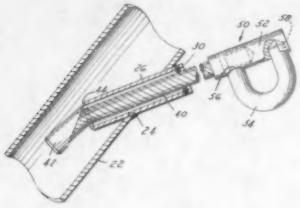
U.S. Cl. 70—234 **1 Claim**

1. In a cable lock system for tubular frame vehicles such as bicycles and motorcycles and for other tubular frame devices wherein a lock cable is stored in a hollow frame tube and capable of being withdrawn to lock the vehicle to a post or similar stationary member, that improvement which comprises:

(a) an entrance tube passing through and affixed to a wall of a hollow frame member and extending partway into said member, and

(b) a cable of relatively stiff resilient material dimensioned to

pass through said entrance tube and having an entrance end permanently bent at an angle relative to the general lineal line of said cable, a stop tube on the bent portion of the entrance end of said cable also dimensioned to pass through said entrance tube having a projecting portion extending away from the entrance end of said cable to project beyond the normal radial dimension of said cable,



said cable being flexible enough to permit straightening for inserting said stop tube and said cable through said entrance tube, whereby when through said tube said cable end will assume the bent position and thrust said projecting portion of said stop tube outwardly to block reverse motion of said entrance end of said cable out of said entrance tube.

4,379,394

KEY HOLDER

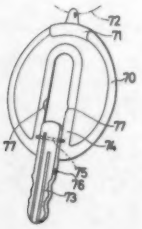
Minoru Toyoda, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Division of Ser. No. 68,568, Sep. 8, 1979. This application Dec. 5, 1980, Ser. No. 213,565

Claims priority, application Japan, Sep. 8, 1978, 53-110845; Feb. 6, 1979, 54-13025; Feb. 6, 1979, 54-13026; Feb. 6, 1979, 54-13027; Feb. 6, 1979, 54-13028; Feb. 6, 1979, 54-13029

Int. Cl.³ A47G *29/10*

U.S. Cl. 70—456 R **7 Claims**



1. A pendant type key holder comprising:

a body having supported lugs including concave portions, said body and supporting lugs extending in a single plane;

a key having opposite side portions and being pivotably mounted on said body and rotatable out of said plane between an operating position in which the key is disposed in said plane and outside said body and a non-operating position in which the key is in said plane and is housed within said lugs of said body;

said key further comprises stopper means attached to at least one of said opposite side portions and adapted to pressure engage with said concave portions to thereby maintain the key at the non-operating position thereof;

whereby the key can freely rotate except when said concave portions engage said stopper means in the non-operating position.

4,379,395

INTERSTAND TENSION CONTROL SYSTEM AND METHOD FOR TANDEM ROLLING MILL

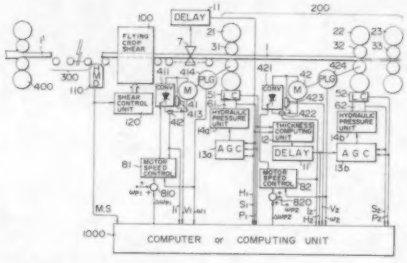
Seizi Konishi; Kazuyuki Tashiro, both of Kitakyushu; Yoshihiro Kamigane, Hitachi; Takakazu Sakurai, Mito; Shinya Tanifuji, and Yasuo Morooka, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 13, 1981, Ser. No. 234,405

Claims priority, application Japan, Feb. 20, 1980, 55-19091

Int. Cl.³ B21B *37/06*

U.S. Cl. 72—8 **14 Claims**



1. An interstand tension control system for a tandem rolling mill including a plurality of rolling stands and a shear means disposed upstream of the tandem rolling mill, for cutting the leading and trailing ends of a workpiece, said system comprising means for detecting process data required for a computation of interstand tension imparted to a workpiece being rolled by the tandem rolling mill, computing means for computing the interstand tension on the basis of the outputs from said process data detecting means thereby generating an interstand tension control signal for cancelling a deviation of the computed interstand tension from a desired value, interstand tension regulating means for regulating the interstand tension at the desired value on the basis of the interstand tension control signal generated from said computing means, means for producing a hold timing signal covering the operating period of said shear means by estimating or directly detecting an operating period of said shear, and means for inhibiting the interstand tension control on the basis of said detected process data during the operating period of said shear.

4,379,396

OPERATION OF A MULTI-STAND HOT ROLLING MILL

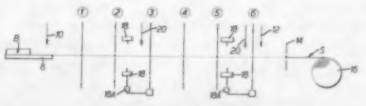
Thomas Hope, Doncaster, and Ewan C. Hewitt, Sheffield, both of England, assignors to Davy-Loewy Limited, Sheffield, England

Filed Aug. 14, 1980, Ser. No. 178,003

Claims priority, application United Kingdom, Aug. 14, 1979, 7928222

Int. Cl.³ B21B *37/08, 37/10, 45/02*

U.S. Cl. 72—13 **9 Claims**



1. A method of operating a multi-stand hot rolling mill for rolling metal strip, comprising the steps of:

rotating the rolls of the stands of said rolling mill at a rela-

tively slow rate of speed so as to thread the head end of a hot metal workpiece through said rolling mill stands;

determining and adjusting the rolling load at each of said stands during said threading operation so as to obtain the required desired output gauge of said strip and the required desired shape of said strip at the last stand, and to predetermine the rolling temperature at said last stand;

rotating said rolls of said stands of said rolling mill at a speed faster than that of said threading speed for rolling said workpiece through said mill;

providing coolant means for said workpiece at one or more interstand locations for cooling said workpiece during said rolling operation;

determining the rolling load at each of the next stands downstream from said one or more interstand coolant application locations during said higher-speed rolling operation and comparing said high-speed rolling operation load values with said low-speed threading operation load values; and

controlling the quantity of coolant applied to said workpiece at each of said coolant interstand locations as a function of, and in response to, the differential between said high-speed and low-speed load values such that said rolling load at each of said downstream stands during said rolling operation remains substantially the same as said rolling load at each of said stands as determined during said threading operation, and the rolling temperature at said last stand remains substantially at said predetermined temperature level.

4,379,397

APPARATUS HAVING SHAPING JAWS FOR MANUFACTURING BODIES OF SPINDLE-TYPE SHAPES

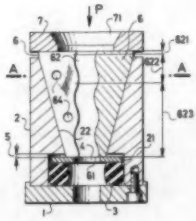
Oldrich Langr, Olomouc, Czechoslovakia, assignor to Sigma concern, Olomouc, Czechoslovakia

Continuation-in-part of Ser. No. 72,469, Sep. 4, 1979, abandoned. This application Sep. 4, 1981, Ser. No. 299,586

Claims priority, application Czechoslovakia, Sep. 1, 1978, 5661-78; Sep. 4, 1978, 5714-78

Int. Cl.³ B21K *1/12*

U.S. Cl. 72—95 **2 Claims**



1. Apparatus for manufacturing spindle-type bodies of circular cross-section from a tubular semi-product, said apparatus comprising at least three shaping jaws which are periodically pressed together and apart in the direction transverse to the longitudinal axis of the manufactured body, said shaping jaws forming a continuous passage having an inlet part, a shaping part and a calibrating part, the shaping part being formed as a cavity of circular cross-section the center of which lies at the inlet of the shaping part and coincides with the axis of the inlet part, the center, which trails the calibrating part, lying on a spiral the lead of which corresponds to the lead of the manufactured body, the eccentricity of the spiral increasing along the whole length of the shaping part continuously from zero to the value corresponding to the eccentricity of the spindle of the manufactured body.

4,379,398

PULL-BACK TYPE INDIRECT EXTRUSION PRESS

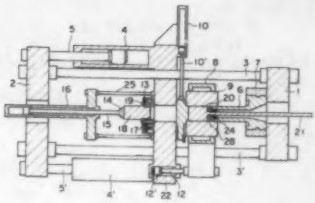
Akira Asari, Osaka; Tatsuhiko Noyori, Kobe, and Tetsuro Takehata, Osaka, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jun. 9, 1981, Ser. No. 272,019

Claims priority, application Japan, Jun. 12, 1980, 55-80779; Jun. 12, 1980, 55-83608[U]

Int. Cl.³ B21C *29/00, 33/00, 35/04, 23/21*

U.S. Cl. 72—273.5 **3 Claims**



1. A pull-back type indirect extrusion press comprising:

a fixed platen;

a plurality of tie rods;

a first and second movable platen opposed to each other on opposite sides of said fixed platen connected together by said plurality of tie rods;

a main cylinder device provided on said fixed platen for driving said first and second movable platens, wherein a space defined between said first movable platen and said fixed platen serves as a billet zone, while a space defined between the second movable platen and said fixed platen serves as an extrusion zone having a container therein;

a scalping member disposed in said billet zone wherein a scalped-billet standby space formed in said billet zone and extends into the fixed platen; and

a movable closure member diposed in said extrusion zone and between said fixed platen and said container.

4,379,399

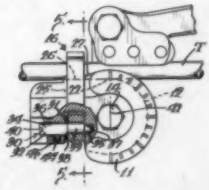
TUBE BENDER CONSTRUCTION

Leonard J. Kowal, Prospect Heights, Ill., assignor to Imperial Clevite Inc., Rolling Meadows, Ill.

Filed Jan. 30, 1981, Ser. No. 229,863

Int. Cl.³ B21D *9/05*

U.S. Cl. 72—388 **15 Claims**



1. In a manually operable tube bender having a mandrel defining a tube-receiving bending groove extending arcuately about a bend axis, and a forming member mounted to said mandrel to swing about said bend axis for urging a tube to be bent into said bending groove, improved means for holding the tube against longitudinal and rotational displacement in said bending groove during a tube bending operation, said tube holding means comprising:

means for supporting a portion of the tube in a clamping space adjacent the mandrel;

a clamp member;

means for mounting the clamp member for pivotal move-

ment into and from engagement with a tube supported by said supporting means in said clamping space to clamp the tube to the supporting means; and

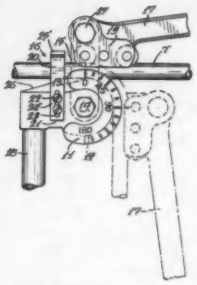
adjustable means for providing a selective infinite adjustment of the pivotal mounting means to adjust the disposition of the clamp member in the tube engagement disposition between maximum and minimum disposition wherein the clamp member is in engagement with the tube for adjusting the clamping force applied by said clamp member to the tube.

4,379,400

TUBE BENDER CONSTRUCTION

Albert J. Schwarz, Lincolnwood, Ill., assignor to Imperial Clevite Inc., Rolling Meadows, Ill.

Filed Jan. 30, 1981, Ser. No. 229,864
Int. Cl.³ B21D 9/05
U.S. Cl. 72—388 **9 Claims**



1. In a tube bender having a mandrel defining a bending groove extending arcuately in a first direction from a bend start point, a tube retaining space adjacent said bend start point in a second direction opposite said first direction, and forming means swingable about the mandrel for urging a tube to be bent progressively into the bending groove, improved means for holding the tube against longitudinal displacement during a bending operation comprising:

a tube holding member having a tube engaging portion and a mounting portion; and

slidable lockable means for mounting the tube holding member in association with the mandrel with the tube engaging portion being position in a selected one of a plurality of infinitely different fixed positions transversely to a tangent to said bending groove at said bend start point extending through said tube retaining space for urging a tube portion, engaged by the tube holding member and extending from said bend start point to said tube retaining space, infinitely adjustably pivotally about the mandrel at said bend start point to an angular disposition accurately tangential to the bending groove at said bend start point.

4,379,401

SYSTEM FOR MEASURING PLATE DEFORMATION PRODUCED BY EXPLOSIVE SHOCK WAVES, AND MOTION-SENSING ACCELEROMETER TRANSDUCER USED THEREIN

Anthony San Miguel, Leucadia, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

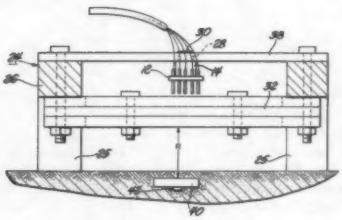
Filed Aug. 28, 1981, Ser. No. 297,294
Int. Cl.³ G01N 33/20, 33/22, 3/30
U.S. Cl. 73—12 **17 Claims**

1. A system embodying novel, motion-sensing accelerometer transducer means for measuring exceptionally high force levels in the domain of from about 1,000,000 to 10,000,000 Gs and also for facilitating measuring structural deformation and average velocity of such deformation of normally high strength structural panel means having planar surfaces, such as steel armor plate and the like as used on military tanks and other armored vehicles which are subject to close-by detonation of high energy explosive charges, such as land mines and the like, said system comprising in combination:

a. selectively closeable and openable, principal electrical circuit means for measuring and obtaining evaluating data for computing desired measurements, said principal circuit means including wire conductor cable means with means for selectively connecting said cable means with a source of d.c. electrical current;

b. said circuit means also including conductor cable terminal means adaptable to be connected to said structural means as a negative ground portion of said circuit;

c. novel, motion-sensing accelerometer transducer means having body means, a plurality of metallic pin-like contact probes supported by said body means, said probes having respective first ends projecting freely from said body means so that said free ends are closely adjacent but at relatively slightly different distances from said planar surface of a structure whose deformation is to be sensed and measured, said first-end-spacings from said surface being such as to have at least two of said probe ends potentially contactable by the deforming surface;



d. means for supporting said transducer means in a position closely adjacent the structural planar surface to be subjected to deformation;

e. said principal electrical circuit means further including a plurality of electrical probe conductor wires each connected at one end respectively with a separate portion of said respective probes which separate portion is remote from said first free ends thereof, said probe conductor wires forming plural in-parallel subcircuits for each probe and respectively connected in said principal circuit means to be potentially activated by said electrical power source and plate-to-pin contact closure of the subcircuit;

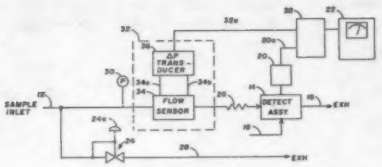
f. each of said in-parallel subcircuits including a resistance capacitor and fast-response electrical data measuring and recording means connected in series between said probe and said principal circuit conductor cable ahead of said means for selectively connecting it with the power source;

g. whereby at least two of said in-parallel subcircuits are adapted to be closed when a said deformable structural surface is blast force deformed so as to make at least brief said electrical plate-to-pin contact with said corresponding at least two probes, and whereby the respective resistance capacitor is discharged to thereby instantaneously generate signal data for reading by display on said data measuring and recording means.

4,379,402
GAS ANALYSIS INSTRUMENT HAVING FLOW RATE COMPENSATION

John N. Harman, III, Placentia, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 22, 1981, Ser. No. 227,332
Int. Cl.³ G01N *31/00*
U.S. Cl. 73—23 16 Claims



1. In a gas analyzer having a detector assembly for receiving a sample gas stream and for producing an output signal that varies in accordance with the mass rate of flow of a component of the sample gas stream, a flow restricting element for limiting the rate at which the sample gas stream is admitted into the detector assembly, and an output indicator for displaying the concentration of said component, the improvement comprising:

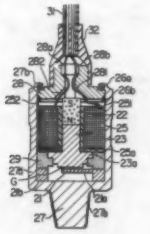
(a) correction signal generating means for generating a correction signal that varies in accordance with the mass rate of flow of the sample gas stream, and

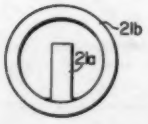
(b) correcting means for applying to said output indicator a corrected output signal that varies in accordance with the output signal of said detector assembly and said correction signal.

4,379,403
KNOCK DETECTING APPARATUS FOR INTERNAL COMBUSTION ENGINES

Tadashi Hattori, Okazaki; Hiroaki Yamaguchi, Anjo, and Yoshinori Ootsuka, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Sep. 9, 1980, Ser. No. 185,445
Claims priority, application Japan, Oct. 18, 1979, 54-134817; Oct. 25, 1979, 54-138133
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 9 Claims





2. A knock detecting apparatus for internal combustion engines, comprising:

vibrator means including at least one reed member and a ring-shaped support member, said reed member being projected from an inner wall of said ring-shaped support member toward the center thereof, both of said reed member and said support member being made as a unitary body of a magnetic material, said reed member having a resonance characteristic corresponding to a knocking frequency of an engine;

a bar-shaped magnetic core having one end being located adjacent to but spaced from said reed member to form an air gap therebetween;

a cup-shaped housing of a magnetic material for accommodating said vibrator means and said bar-shaped magnetic core so that said support member of said vibrator means is fixed to an inside surface of said cup-shaped housing;

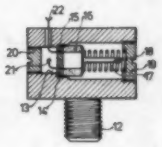
magnetic flux generating means for generating magnetic flux through a magnetic path formed by said bar-shaped magnetic core, said air gap, said reed member, said support member and a side wall of said cup-shaped housing, said magnetic flux generating means including an excitation coil for generating controllable magnetic flux; and

magnetic flux sensing means disposed adjacent to and coupled with said magnetic path to sense changes in the magnetic reluctance of said magnetic path caused by changes in the width of said gap due to vibrations of said reed member.

4,379,404
PIEZOELECTRIC ENGINE-KNOCK SENSOR

Hans J. Hamisch; Manfred Boruschweitz, and Theodor Gast, all of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 236,907
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006655; Mar. 7, 1980, 3008780
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 8 Claims



1. A sensor for detecting oscillations in an internal combustion engine resulting from engine knocks, comprising:

a tubular body (16) of piezoelectric material having a pair of electrodes (23,24) on diammetrically opposite longitudinal patches of a first cylindrical surface of said tubular body and a counter-electrode on a second cylindrical surface of said tubular body;

a casing having an internal cylindrical opening for receiving said piezoelectric body, said casing having an internal stop portion (13,14) for holding said tubular body against axial movement;

means (15) for insulatingly and supportingly spacing said tubular body from said stop portion (13,14) of said casing;

a flexure vibration member (18) having a free end extending from a base portion, said base portion having oppositely directed lateral extensions for dynamically connecting vibratory motion of said free end differentially as pressure variations to two diametrically opposite portions of the end of said tubular body (16) opposite from the end thereof supported by said spacing means (15);

a compression spring (17) for pressing said lateral extensions of said vibration member (18) against said end portions of said tubular body (16), and

means (19) held on said casing (25) for compressing said

spring (17) against said lateral extensions of said vibration member.

4,379,405
FORCE TRANSDUCER, PARTICULARLY FOR BALLISTIC PRESSURE MEASURING

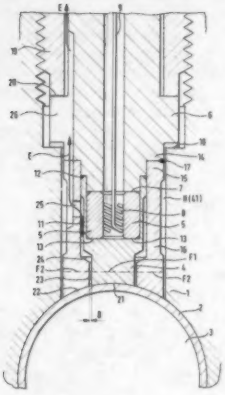
Paul Engeler, Frauenfeld; Hans C. Sonderegger, Neftenbach, and Peter Wolfer, Andelfingen, all of Switzerland, assignors to Kistler Instrumente AG, Winterthur, Switzerland

Filed Jun. 5, 1981, Ser. No. 270,842

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1980, 3021778

Int. Cl.³ G01L *5/14*

U.S. Cl. 73—167 **11 Claims**



1. A force transducer for use in ballistic pressure measurement, which comprises:

a force transmission element including a first surface exposed to a pressure to be measured;

sensor element means for producing an electrical signal representing said pressure to be measured, said elements being held under pretension between a second surface of said force transmission element and a basic receiver component; and

an outer sleeve surrounding the exterior of said force transmission element, said outer sleeve being coupled to said basic receiver component, said outer sleeve including a front surface exposed to said pressure to be measured;

wherein the spring rigidity of said outer sleeve is coordinated with the spring rigidity of said force transmission element such that said outer sleeve yields to approximately the same extent as said force transmission element to the effective force of said pressure to be measured in an axial direction of said transducer.

4,379,406
RELATIVE HUMIDITY DETECTOR SYSTEMS AND METHOD OF INCREASING THE CALIBRATION PERIOD OF RELATIVE HUMIDITY DETECTOR SYSTEMS

Paul F. Bennewitz, 8310 Cutler Ave., Albuquerque, N. Mex. 87110, and Matt C. Bennewitz, 905 Nakomis Ct., NE., Albuquerque, N. Mex. 87112

Filed Sep. 25, 1980, Ser. No. 190,734

Int. Cl.³ G01N *25/56*

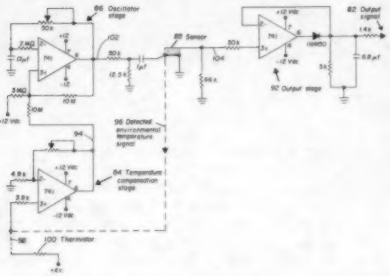
U.S. Cl. 73—336.5 **11 Claims**

1. A relative humidity detector system for generating an output signal which varies linearly with relative humidity, essentially independent of changes in surrounding environmental temperature, comprising:

means for detecting surrounding environmental temperature;

means for producing a temperature compensation signal which varies proportionally with detected environmental temperature;

oscillator means for producing a d.c. voltage signal which is periodically discharged at a frequency (f_i) equal to a free running discharge frequency (f_o) of said oscillator means plus a compensation frequency (f_c) induced in said oscillator means by said temperature compensation signal;



relative humidity sensor means for producing a detected relative humidity signal, said relative humidity sensor means connected to said oscillator means such that said relative humidity sensor means functions as a frequency to voltage converter to adjust said detected relative humidity signal for changes in surrounding environmental temperature proportionally with said frequency (f_i);

means for producing said output signal which varies linearly with relative humidity in response to the adjusted relative humidity signal.

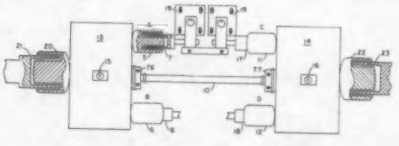
4,379,407
SYSTEM FOR CONDUCTING RESONANCE MEASUREMENTS OF ROCK MATERIALS UNDER CONFINING PRESSURE

Lucien Masse; William L. Medlin, both of Dallas, and James H. Sexton, Duncanville, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 1, 1981, Ser. No. 259,775

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—579 **2 Claims**



1. In a system for measuring resonance characteristics of rock material under an oscillatory driving force, the improvement comprising:

(a) means for enclosing said rock material under confining pressure,

(b) means for adjusting the confining pressure without introducing significant viscous damping in the oscillations, and

(c) means for controlling pore pressure within said rock material independently of said confining pressure.

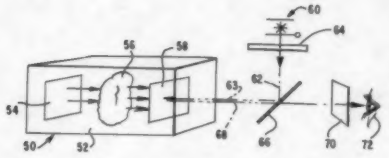
4,379,408
LIQUID CRYSTAL TECHNIQUE FOR EXAMINING INTERNAL STRUCTURES

Jaswinder S. Sandhu, Chicago, Ill., assignor to Raj Technology Partnership, Chicago, Ill.

Continuation-in-part of Ser. No. 224,173, Jan. 12, 1981. This application Feb. 6, 1981, Ser. No. 232,247

Int. Cl.[3] **G01N** *29/00*; **G02F** *1/11*

U.S. Cl. 73—603 **23 Claims**



1. A liquid-crystal acousto-optical detector cell for ultrasonic energy detection and image display said cell having a pair of substantially rigid covers, a liquid crystal material positioned between said covers, and a peripheral spacer and sealing member surrounding said liquid crystal material and sealingly engaging said covers, wherein the improvement comprises said cell exhibiting a good quality image, high sonic transmission and low angular dependence, and wherein

(a) each of said covers is substantially acoustically transparent;

(b) at least one of said covers is optically transparent and said optically transparent cover is a laminate having at least three layers, with each of said layers of said laminate having a thickness much much less than ¼ of the wave length of the ultrasonic energy propagating through said layer; and

(c) with the other cover having at least one layer and the thickness of that layer being much much less than ¼ of the wave length of the ultrasonic energy propagating therethrough.

4,379,409
APPARATUS FOR PRODUCING ULTRASONIC WAVES IN A WORKPIECE

Erik Primbsch, Ahrensburg, and Wolf Bickel, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Krautkramer-Branson, Inc., Stratford, Conn.

Filed Sep. 3, 1981, Ser. No. 299,049

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041875

Int. Cl.[3] **G01N** *9/24, 29/00*; **G02B** *5/14*

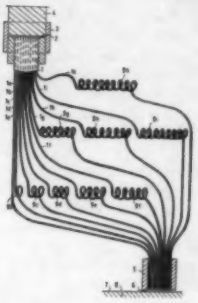
U.S. Cl. 73—643 **4 Claims**

1. An apparatus for producing in a light absorbing workpiece ultrasonic waves having predetermined direction of propagation and wave-form, the ultrasonic waves being induced in the workpiece by subjecting spaced surface zones having predetermined geometric shapes to laser pulse illumination in predetermined time sequence comprising:

an optical fiber cable comprising a plurality of fiber bundles, each bundle having a plurality of fibers, said bundles having respective light input ends disposed at a common input surface for being coupled to a laser for receiving light energy from such laser at said input surface, and having respective light output ends disposed at a common output surface of a probe head for causing said surface zones to be illuminated with said light energy when said output surface is disposed opposite said surface zones;

the output end of each of said bundles disposed in said probe head having its fibers fanned out at said output surface in accordance with the predetermined geometric shape of a respective zone which said bundle is to illuminate, and said respective output ends of said bundles being spaced from one another along said output surface commensurate with the spacing of said zones, and

means causing said fiber bundles to have different optical



path lengths to provide predetermined time delays for the laser light exiting from said respective fiber bundles at said output surface when said bundles are energized simultaneously at said input surface.

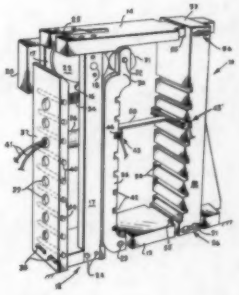
4,379,410
BATTERY ELECTRODE FATIGUE SIMULATOR

David H. Fritts, Dayton, and John F. Leonard, Xenia, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 22, 1981, Ser. No. 227,565

Int. Cl.[3] **G01N** *3/32, 3/08*

U.S. Cl. 73—809 **6 Claims**



1. A battery electrode fatigue simulator comprising:

a frame;

a first support beam pivotally mounted at one end thereof to said frame and having a cam follower mounted at the other end thereof, said first support beam further having a plurality of notches situated therein, said notches being longitudinally displaced from each other with respect to the pivoting end of said first support beam, and means located in at least one of said notches for fixedly securing therein one end of an element which is to undergo fatigue simulation;

a second support beam adjustably secured at both ends thereof to said frame juxtaposed said first support beam,

said second support beam having a plurality of notches therein oppositely disposed from said notches in said first support beam, and means located in at least one of said notches in said second support beam for fixedly securing the other end of said element therein;

a cam of preselected configuration rotatably mounted within said frame adjacent said cam follower, means operably connected to said cam for rotating said cam at a predetermined rate of speed, and means interconnected between said frame and said first support beam for constantly biasing said cam follower against said cam whereby rotational movement of said cam causes pivotal movement of said first support beam to take place in order to apply a predetermined cyclic stress to said element;

means secured to said frame juxtaposed said first support beam for determining the displacement of said first support beam at a plurality of locations along said first support beam, said locations being coincidental with said plurality of notches located in said first support beam in order to provide displacement information about said element during application of said cyclic stress; and

means operably connected between said element securing means in said first support beam and said element securing means in said second support beam for determining resistance in said element during the application of said cyclic stress;

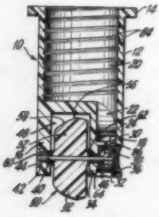
whereby a relationship established between said displacement and said resistance is representative of battery electrode fatigue undergone during actual battery operation.

4,379,411

FLOW TRANSDUCER

Edmund G. Laviano, Patchogue, and Gerald S. Lefebvre, Holtsville, both of N.Y., assignors to Interactive Design Inc., Lake Ronkonkoma, N.Y.

Filed Feb. 13, 1981, Ser. No. 234,304
Int. Cl.³ G01F *1/075*
U.S. Cl. 73—861.78 **13 Claims**



1. A flow transducer for measuring the flow of a fluid, said transducer comprising:

a housing having two spaced apart depending legs;

a shaft rotatably mounted between said legs;

a rotor secured on said shaft for rotation therewith, and being freely rotatable between said legs by means of the flow of fluid thereacross;

a chamber provided in one of said legs with a portion of said shaft passing into said chamber;

trigger means secured on said shaft portion for rotation therewith, and being retained in said chamber for producing a change in a measurable characteristic as a function of the rotation of said rotor;

sensor means contained in said housing adjacent to said trigger means, and producing an electrical output responsive to said change in the measurable characteristic;

said rotor including a paddle wheel having a plurality of thin blades radially extending from a central hub; and

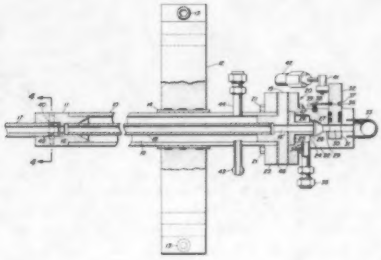
a distal end of each blade being angularly shaped curving toward one side edge of said blade.

4,379,412

SAMPLING PROBE FOR STACK GAS MONITORING SYSTEM

Richard D. Wood, Lewisburg, W. Va., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 21, 1981, Ser. No. 332,705
Int. Cl.³ G01N *1/24*
U.S. Cl. 73—863.24 **3 Claims**



1. A probe for the extraction of gas samples from a high temperature, particulate laden gas stream, comprising,

an elongated tube;

a pair of plugs having axial bores therein, said plugs being fitted in opposite ends of said tube with said bores in alignment;

a hollow, porous walled cylinder supported by said plugs concentrically within said tube, said cylinder and said tube being dimensioned to provide a clearance space between the outer wall of said cylinder and the inner wall of said tube, said cylinder forming a conduit interconnecting said plug bores;

means for admitting particle laden gas to be sampled to said bore of one of said plugs;

means for withdrawing gas samples from said clearance space surrounding said porous cylinder;

a combination ejector-blowback valve secured to the other of said plugs externally of said tube, said ejector-blowback valve including,

a body, said body having therein

a cylindrical chamber, a convergent walled cavity adjacent to and communicating with said chamber and an exit bore,

said body being secured to said other plug with said chamber, said cavity and said exit bore coaxially aligned with said axial bore of said other plug,

a hollow cylindrical insert supported in said body chamber coaxially with and forming an extension of said axial bore of said other plug, said insert extending the length of said chamber and into said cavity, said insert being dimensioned to provide a clearance space between the outer wall of said insert and the wall of said cavity;

a transverse bore in said body intersecting said exit bore;

a valve stem rotatably mounted in said transverse bore, said valve stem having a transverse aperture therein which is aligned with said exit bore in one rotational position of said stem, said exit bore being closed by said stem in a second rotational position of said stem; and

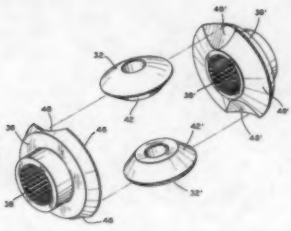
means for admitting fluid under pressure to said body chamber; said tube, said plugs, said porous cylinder, said body, said insert and said valve stem each being formed of temperature 40 and corrosion resistant material.

4,379,413

ANGLE DRIVE UNIT

Michael A. Brammer, Columbia City, and Donald P. Bowers, Fort Wayne, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Oct. 24, 1980, Ser. No. 200,182
Int. Cl.³ F16H 1/44
U.S. Cl. 74—710.5 9 Claims



1. In a drive unit adapted to drivingly connect angularly disposed rotatable drive and driven shafts, said drive unit comprising:

a housing drivingly connected to said drive shaft,

drive means in said housing for transmitting rotation from said housing to said driven shaft,

the improvement wherein said drive means comprises

an input member drivingly connected to said housing,

an output member drivingly connected to said driven shaft,

said input and output members are unfinished gear blanks having opposed annular beveled outer surfaces,

locking means integral with at least one of said input and output members engaging to directly connect said housing and driven shaft,

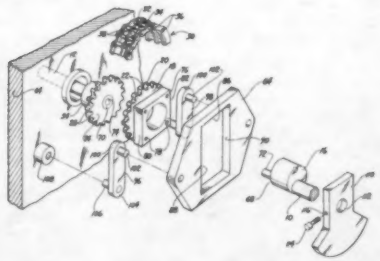
said beveled surface on one of said gear blanks has a recess for mating with said beveled surface of said other gear blank and constituting said locking means.

4,379,414

HIGH RATIO SPEED REDUCER

Hugh St. L. Dannatt, Bethel, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 8, 1980, Ser. No. 214,051
Int. Cl.³ F16H 1/28
U.S. Cl. 74—805 8 Claims



1. A high ratio speed reducer comprising: rotatable input and output shafts having a common axis, said input shaft having an eccentric portion;

an output sprocket mounted on said output shaft for rotation therewith, said output sprocket having a circumferential perimeter including a number of teeth;

a drive sprocket having a circumferential perimeter including a number of teeth differing by at least one tooth from the number of output sprocket teeth, said drive sprocket being rotatably mounted with respect to said eccentric portion of said input shaft and orbiting with respect to said common axis as said input shaft is rotated, a segment of said drive sprocket perimeter being located outside said output sprocket perimeter as said drive sprocket orbits;

an endless double chain engaging both sprockets, said chain having a driving length portion engaging said drive sprocket teeth on said segment while being disengaged from said teeth of said output sprocket, said chain having a driven length portion diametrically opposite said driving length portion engaging said output sprocket teeth and being disengaged from said drive sprocket teeth; and

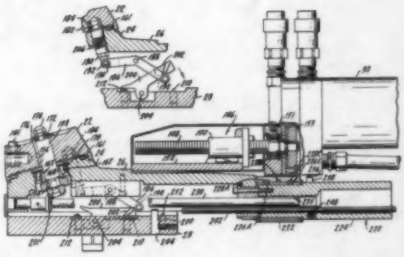
means for preventing turning of said drive sprocket as it orbits, including (i) a slide body attached to one side of said drive sprocket for movement therewith, said body including two parallel slide surfaces extending in parallel relation to said common axis of said input and output shafts; (ii) a housing including an elongate slot receiving said slide body, said elongate slot having two parallel slip surfaces engaging said slide surfaces of said slide body to permit reciprocal movement of said slide body in said slot in a first direction transverse to said common axis; and (iii) means permitting reciprocal movement of said housing in a second direction transverse to both said first direction and said common axis.

4,379,415

AUTOMATIC TURRET LATHE

Adolph V. Klancnik, Glenview, and Kenneth A. Klancnik, Palatine, both of Ill., assignors to Universal Automatic Corporation, Des Plaines, Ill.

Division of Ser. No. 60,790, Jul. 25, 1979, Pat. No. 4,324,161.
This application Jan. 19, 1981, Ser. No. 226,428
Int. Cl.³ B23B 29/32
U.S. Cl. 82—36 A 4 Claims



1. In a turret lathe where a turret is rotatably supported for indexing movement to one of several tool positions on the head of a turret slide having both tool advance and tool return motion, and wherein the turret is carried by a rotatable turret index shaft supported by a bearing inside said head on an axis tilted from the vertical:

an indexing ratchet fixed to one end of said shaft to turn the shaft when the ratchet is actuated;

said bearing comprising a pair of tapered bearing races respectively on said head and said shaft and capturing therebetween a set of tapered roller bearings;

one of said tapered bearing races having an end engaged with said ratchet;

screw means at the other end of said index shaft for adjusting said shaft axially to cause said ratchet to engage said one of the bearing races with more or less force to apply a selected pre-load to said bearing;

and a thrust bearing interposed between the opposing surfaces of the turret and head.

4,379,416

FOOD-SLICING MACHINE AND METHOD

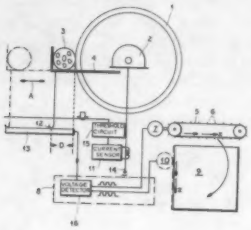
Fritz Kuchler, Klagenfurt, Austria, assignor to Brain Dust Patents Establishment, Vaduz, Liechtenstein

Continuation-in-part of Ser. No. 911,289, May 31, 1978, Pat. No. 4,217,650, and a continuation-in-part of Ser. No. 911,290, May 31, 1979, abandoned, and a continuation-in-part of Ser. No. 74,775, Sep. 12, 1979, abandoned. This application Apr. 24, 1980, Ser. No. 143,929

Claims priority, application Austria, Jun. 1, 1977, 3858/77; Jun. 1, 1977, 3859/77; Sep. 13, 1978, 6603/78

Int. Cl.³ B26D *7/32, 7/30*

U.S. Cl. 83—23 6 Claims



3. A method of preparing slices of an elongated foodstuff of generally uniform cross section, said method comprising the steps of:

supporting said foodstuff on a table adjacent a blade;

relatively displacing said table and said blade in a predetermined slice direction perpendicular to the longitudinal direction of said foodstuff into a succession of slices each having a respective width measured parallel to said slice direction;

depositing said succession of slices on a support in a plurality of rows with the slices in each row offset from one another by a predetermined first distance and the rows being relatively offset by a predetermined second distance,

generating an output signal when said blade engages into and cuts said foodstuff;

continuously monitoring the relative positions of said table and said blade in said slice direction;

signaling the monitored relative positions of said table and said blade on generation of said output to measure the widths of said slices; and

automatically varying at least one of said distances in dependence on the measured width.

4,379,417

METHOD OF CUTTING A WORKPIECE

Paul Pieper, and Walter Cordier, both of Menden, Fed. Rep. of Germany, assignors to Rolf Peddinghaus, Ennepetal, Fed. Rep. of Germany

Division of Ser. No. 71,282, Aug. 30, 1979, Pat. No. 4,289,054. This application May 4, 1981, Ser. No. 260,069

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1978, 2838656

Int. Cl.³ B23D *45/04*

U.S. Cl. 83—27 8 Claims

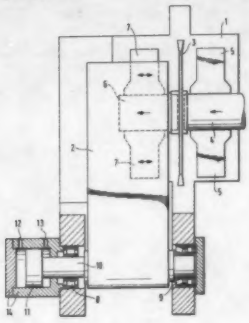
1. An improved method of cutting a workpiece comprising the following steps:

(a) positioning a workpiece for cutting such that a saw, including drive means, supported by an arm is movable with the arm transversely of the workpiece,

(b) cutting the workpiece into two portions by moving the saw relatively transversely thereof,

(c) effecting movement of one of the portions away from the other portion,

(d) displacing the arm laterally of said relative transverse movement to move said saw away from the other portion of the workpiece, and



(e) retracting said saw relative to the workpiece by moving said arm.

4,379,418

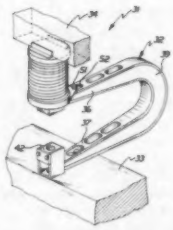
SAFETY BOOT FOR PUNCH OR THE LIKE

Robert P. Martin, Jr., c/o Martin Sheet Metal, Inc., 7108 Madison Ave., Cleveland, Ohio 44102

Filed Feb. 3, 1981, Ser. No. 231,253

Int. Cl.³ B26F *1/02;* B26D *7/22*

U.S. Cl. 83—544 9 Claims

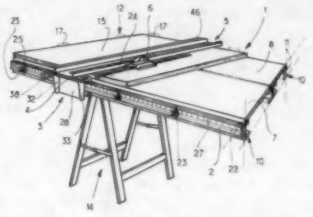


1. In combination, a press brake having a bed and a ram movable vertically in a stroke cycle towards and away from the ram, a C-frame assembly removably secured to the bed of the press brake, said C-frame having a pair of generally horizontal jaws vertically spaced from one another, the free ends of the jaws being adapted to support a pair of tool elements in working alignment, operator means on an upper one of said jaws and disposed in the path of said ram, said operator means being forcibly displaced by said ram to cause said tool elements to cooperate in working a workpiece disposed between said jaws, said operator means being constructed and arranged to be contacted by the ram through a final portion of its forward stroke such that a gap exists between the ram and operator means during the initial part of the forward stroke of the ram, and safety shield means extending between said ram and said operator means, said safety shield means being capable of excluding inadvertent positioning of an operator's limb in said gap, said safety shield means including fittings at its upper and lower ends, an upper end fitting including means to laterally stabilize the sleeve by engaging said ram, a lower end fitting including means to engage the upper jaw of said C-frame, both of said engaging means allowing said sleeve to be laterally stabilized by both said ram and said C-frame, said safety shield means, including said lower end fitting, being constructed and arranged to leave the space between said jaws unobstructed through the full stroke cycle of the ram.

4,379,419
PANEL GROOVING APPARATUS

Jean P. Woock, 5, Rue d'Aquitaine, Reichstett, 67460 - Souffelweyersheim, and Christian Baerst, 8, Rue de la Liberte, 67380 - Lingolsheim, both of France

Filed Jul. 2, 1980, Ser. No. 165,459
Claims priority, application France, Jul. 6, 1979, 79 18306
Int. Cl.³ B26D *3/06*
U.S. Cl. 83—875 10 Claims

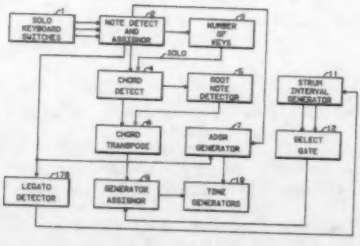


1. In panel grooving apparatus, the improvement comprising in combination:
- a table for supporting a panel at a working level;
- a rail along a side of the table;
- a working assembly mobile on said rail;
- means for selectively immobilizing said working assembly in various grooving positions, including stops movable and selectively arrestable along said rail and engageable by part of said working assembly; and
- movable peripheral elements on said table for releasably retaining said panel;
- said working assembly including a carriage movable in said rail, and a rectilinear tool guide having an arm articulated on said carriage;
- said carriage having a base and a plurality of axles supported by, and extending perpendicularly to said base, and pulleys rotatably mounted on said axles for rollingly engaging said rail;
- said base having two lateral flanges for pivotally mounting said arm, and an upper flange for supporting said arm;
- said base carrying a locking device for engaging said stops; and
- said locking device including a lever pivoted on said base and having a cut-out for engaging said stops for immobilizing the carriage, and a handle at a free end of said lever.

4,379,420
ADAPTIVE STRUM KEYING FOR A KEYBOARD ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Oct. 19, 1981, Ser. No. 313,026
Int. Cl.³ G10H *1/38, 1/40, 7/00*
U.S. Cl. 84—1.03 15 Claims

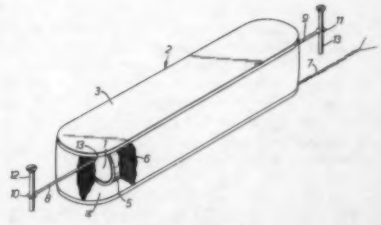


1. In combination with a keyboard operated electronic musical instrument having keying means comprising an array of keyswitches operable between actuated and released states and having a number of tone generators assigned to actuated keyswitches, apparatus for imitating a strummed stringed musical instrument comprising;
- a detection means responsive to operable states of said array of keyswitches wherein a switch data value is generated corresponding to each keyswitch operated in an actuated state,
- a status memory for storing said switch data values,
- a chord detect means, responsive to the switch data values stored in said status memory, comprising a matched filter processor wherein a musical chord type is selected from a preselected set of musical chord types irrespectively of whether or not said stored switch data values correspond to a musical chord type,
- a root note detect means, responsive to the switch data values stored in said status memory, for selecting a chord root note corresponding to said selected musical chord type,
- an interval measuring means responsive to the switch data values generated by said detection means, whereby a time interval number is generated corresponding to the elapsed time between successive actuated state of the keyswitches in said array of keyswitches,
- an interval detection means responsive to said time interval number wherein a plurality of control signals are generated,
- a strum generation means, responsive to said pluarlity of control signals, wherein a sequence of strum keying signals is generated,
- a note data generator means responsive to said selected chord type and said selected chord root note wherein input note data is generated,
- a plurality of tone generators operable at frequencies responsive to said input note data,
- a strum keying means, responsive to said strum keying signals, for selectively providing said input note data to said plurality of tone generators thereby imitating said strummed stringed musical instrument.

4,379,421
ELECTRICAL PICKUPS

Kevin N. G. Nunan, Lake Cottage, Stoke Rd., Biships Cleeve, Cheltenham, Gloucestershire GL52 4RP, England

Filed Oct. 16, 1981, Ser. No. 312,124
Claims priority, application United Kingdom, Oct. 22, 1980, 8033999
Int. Cl.³ G10H *3/18*
U.S. Cl. 84—1.15 9 Claims



1. An electrical pickup assembly for a stringed musical instrument, comprising an elongate permanent magnet which is magnetized so that the magnetic poles thereof are respectively positioned at opposite side edges of the magnet, and a coil surrounding and wound lengthwise around the magnet, the magnet and coil being relatively rotatable about a longitudinal axis of the magnet and the assembly having mounting means so

that it can be fixed to an instrument without impeding said relative rotation of the magnet and coil through at least an angle of 180° at the limits of which angle a magnetic axis of the magnet is substantially aligned with the winding axis of the coil.

4,379,422

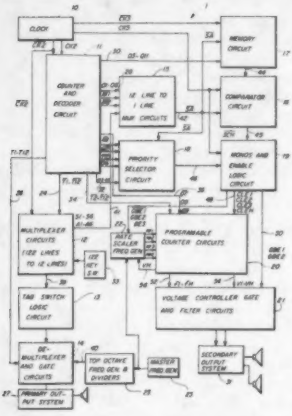
POLYPHONIC ELECTRONIC MUSIC SYSTEM

Walter Munch, Fort Thomas, Ky., and Dale M. Uetrecht, Colerain Township, Hamilton County, Ohio, assignors to Baldwin Piano & Organ Company, Cincinnati, Ohio

Continuation of Ser. No. 824,656, Aug. 15, 1977. This application Apr. 27, 1982, Ser. No. 372,137

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.19 **16 Claims**



1. A polyphonic electronic music system for an electronic musical instrument having at least one manual of keys corresponding to the notes of the musical scale comprising:

means for producing tone signals of frequencies corresponding to the notes of keys contemporaneously played on the manual of keys; and

means for gating and filtering the tone signals to produce a different pattern of voices to be assigned to played notes depending upon the number and sequence of keys played at any given time.

4. A polyphonic electronic music system for an electronic musical instrument comprising:

a clock means for providing a plurality of clock outputs;

counter and decoder means for generating from the clock outputs a first set of time division logic signals representative of twelve notes of an octave, a second set of time division logic signals representative of two or more octaves, and a third set of time division logic signals representative of at least two manuals of keys of the electronic musical instrument;

means for transmitting representative ones of the first set of time division logic signals to corresponding ones of the key switches of the at least two manuals;

multiplexer means for receiving the logic signals corresponding to actuated key switches, the second set of logic signals, and the third set of logic signals and providing a serial train of time division multiplex signal identifying the actuated key switches;

memory means for storing the serial train of logic signals representative of the then actuated key switches during the next cycle of the counter and decoder means and providing a hold signal when the stored serial train does not correspond to the next serial train;

priority selector means for providing time division logic signals representative of the three lowest notes and the highest note of the actuated key switches;

monostable and enable logic means for receiving the hold signal from the memory means, and the logic signals from the priority selector means and providing in response thereto output logic signals representative of the number of actuated keys and logic signals representative of the lowest three notes and the highest note of the actuated keys;

programmable counter means for receiving the logic signals from the monostable and enable logic means representative of the actuated keys, the first set of logic signals representative of the twelve notes of an octave, and logic signals representative of the two or more octaves and in response thereto, and producing output tone signals corresponding to the notes of the actuated key switches and voltages representative of the notes of the actuated key switches;

voltage controlled gate and filter means for wave shaping the output tone signals from the programmable counter means to produce desired voicing characteristics;

an output system for converting the wave shaped tone signals into audible sound.

7. In an electronic organ including key switches operable by keys on a keyboard corresponding to the notes of the musical scale, tone generators for producing tone signals corresponding to the notes of the key switches, means for applying the tone signals of actuated key switches to a primary audio output system; an improved accompaniment system comprising;

a secondary audio output system;

means for simultaneously producing a plurality of secondary tone signals corresponding to certain preselected simultaneously actuated ones of said key switches;

means for wave shaping said secondary tone signals so that individual ones of said secondary tone signals are wave shaped to have individual distinct voices, said wave shaped tone signals being applied to said secondary audio output system to provide an orchestral accompaniment for tone signals sounded by the primary audio output system.

4,379,423

HYDRAULIC AMPLIFIER

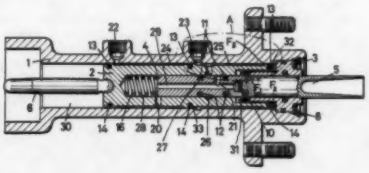
Günther Leineweber, Gifhorn, and Rolf Warnecke, Winkel, both of Fed. Rep. of Germany, assignors to Volkswagenwerk AG, Wolfsburg, Fed. Rep. of Germany

Filed Jan. 19, 1977, Ser. No. 760,657

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1976, 2602050

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—373 **5 Claims**



1. A hydraulic amplifier comprising:

(a) a housing having an axial bore as well as a pressure conduit and a return conduit;

(b) an amplifier piston arranged axially slidably in said bore, said piston having a piston face and a blind axial bore;

(c) a control slide axially slidably arranged in said blind bore of said piston;

(d) said piston and slide together constituting a unit being provided with passages for placing said piston face in communication with said pressure and return conduits, respectively, said passages including first and second

passage means for selectively controlling the communication between said piston face and said pressure and return conduits, respectively, i.e. the flow of hydraulic fluid through said pressure and return conduits, respectively, depending on the axial position of said slide in said bore of said piston;

(e) said unit being free of pressure equalization by arranging each of said first and second passage means asymmetrically with respect to the peripheral surface of said slide;

(f) each of said first and second passage means being arranged such that whichever passage means is, at any given time, closed, it is automatically tightly sealed as a result of radial displacement of said slide towards such closed passage means, said radial displacement being actuated by a radial force resulting from the difference between the lower pressure prevailing in the immediate region of said closed passage means and the higher pressure acting on the peripheral surface of said slide upstream of said immediate region.

4,379,424

DEVICES FOR LIMITING THE STROKE OF A HYDRAULIC RAM USED IN MINING APPARATUS

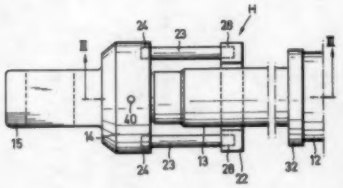
Harry Rosenberg, Lüdinghausen; Karl-Heinz Plester, Lunen; Friedrich Eggenstein, Bergkamen-Oberaden, and Günter Terhorst, Dülmen, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Jun. 11, 1980, Ser. No. 158,628

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1979, 2924380

Int. Cl.³ F15B *15/24*

U.S. Cl. 92—13.41 **13 Claims**



1. In or for mineral mining apparatus; the combination of a double-acting hydraulic ram with a relatively-displaceable cylinder component and piston rod, a head piece component fitted to the piston rod to confront the cylinder components, and an adjustable device for selectively limiting the stroke of the ram, said device comprising a stop member disposed between said components, the stop member partly surrounding the piston rod so as not to extend around the full periphery thereof, and connecting means at least including a plurality of elongate pins aligned parallel to the piston rod for connecting the stop member to one of said components so as to abut with the other of said components thereby to limit the stroke of the ram, wherein the pins are located in some of a group of reception apertures in the said one component, said apertures being spaced around a common pitch circle with its centre on the axis of the piston rod, the total number of apertures exceeding the number of pins to permit the stop member to be angularly oriented around the piston rod into a variety of dispositions.

4,379,425

DOUBLE-ACTING PISTON FOR SWASH-PLATE TYPE COMPRESSORS

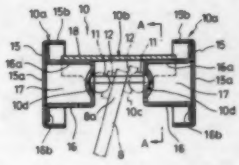
Yutaka Ishizuka, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Saitama, Japan

Filed Nov. 20, 1980, Ser. No. 208,540

Claims priority, application Japan, Nov. 30, 1979, 54-165681[U]; May 24, 1980, 55-71388[U]

Int. Cl.³ F01B *3/02*; F04B *1/16*; B23P *15/10*

U.S. Cl. 92—71 **14 Claims**



1. A double-acting piston for use in a swash-plate type compressor of the type including a frame having at least one cylinder bore formed therein, a drive shaft axially extending through said frame, a swash plate secured on said drive shaft, and shoes arranged in sliding contact with said swash plate at opposite side surfaces thereof; said double-acting piston comprising:

a pair of piston heads provided at opposite ends of said piston, said piston heads each having a first part which includes a first hollow cylindrical member extending axially inwardly of said piston and a second part which includes a second hollow cylindrical member extending radially outwardly from said first part, said piston heads each having a peripheral lateral surface adapted for sliding contact with an inner peripheral surface of said cylinder bore, said piston heads each being formed of at least one piece and said first and second hollow cylindrical members being formed of respective separate pieces;

an intermediate coupling member interposed between said piston heads to couple same to each other, said intermediate coupling member comprising a piece separate from said at least one piece forming each of said piston heads;

means joining said piston heads and said intermediate coupling member to each other;

said first parts of said piston heads each having opposed inner ends thereof spaced from each other and cooperating with said intermediate coupling member to define therebetween a central recess opening radially inwardly of said compressor, said first hollow cylindrical member forming said first part of each of said piston heads having an inner end face formed with a ball pocket in the form of a ball-receiving recess; and

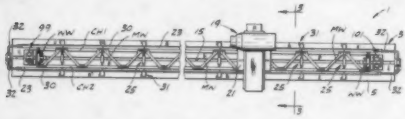
a pair of generally ball-shaped members respectively engaged in said ball-receiving recesses of said first hollow cylindrical members, said generally ball-shaped members being spaced from each other in the axial direction of said piston, said space between said generally ball-shaped members being in said central recess opening defined between said inner ends of said first parts;

said swash plate having a peripheral fringe portion thereof engaged in said space between said generally ball-shaped members via said shoes which respectively engage between one of said generally ball-shaped members and said swash plate.

4,379,426
TRUSS-FABRICATING MACHINE

James L. Thompson, Ballwin, and Owen T. Hornkohl, Webster Groves, both of Mo., assignors to Moehlenpah Industries, Inc., St. Louis, Mo.

Filed Sep. 18, 1981, Ser. No. 303,398
Int. Cl.³ B30B 15/00
U.S. Cl. 100—100 47 Claims



1. A machine for fabricating trusses of the type comprising a pair of generally parallel wood chord members having opposing inside faces spaced apart a fixed predetermined distance, and outside faces, a series of web members spanning the wood chord members, and connector means having teeth adapted to be pressed into the wood chord members for rigidly interconnecting the web and chord members, said machine comprising:

a table having an elongate top for supporting said pair of chord members, said web members and said connector means in a position in which the web members are generally horizontal, in which the teeth of said connector means are generally vertical, and in which the wood chord members extend longitudinally of the table;

means on the top of the table for clamping the chord members in fixed position with respect to the table comprising outside jaw means engageable with the outside faces of the chord members of said pair of chord members, said outside jaw means comprising expansible tube means extending longitudinally of the table for effecting clamping action of the outside jaw means on said chord members to clamp them in fixed position with respect to the table, said tube means having inlet means for entry of a pressurized fluid into the tube means thereby to expand the tube means in cross section, said tube means during such expansion being adapted to effect said clamping action; and

a press movable longitudinally with respect to the table top for pressing the teeth of said connector means into the chord members when the chord members are clamped in fixed position with respect to the table.

4,379,427
APPARATUS FOR APPLYING MARKS TO A PRODUCT E.G. A COIL OF ROLLED STEEL

Jan Middel, Barsingerhorn, and Cornelis A. Gorter, Velsen-Noord, both of Netherlands, assignors to Estel Hoogovens B.V., Ijmuiden, Netherlands

Filed Aug. 10, 1981, Ser. No. 291,336
Claims priority, application Netherlands, Sep. 3, 1980, 8004984
Int. Cl.³ B41F 17/20, 17/06
U.S. Cl. 101—35 5 Claims

1. Apparatus for applying marks to the surface of a product, comprising

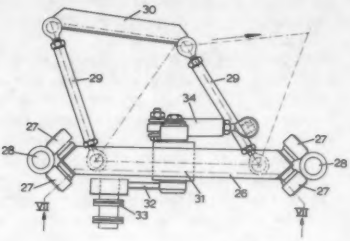
(a) a base,

(b) means for moving said base reciprocatingly along a path which path is adjacent the surface of the product to be marked,

(c) a marking carriage,

(d) marking means mounted on said marking carriage for applying marking material to the surface to be marked,

(e) at least two swivellable support arms movably mounting said marking carriage on the base, the arms having first and second ends and being pivotally secured to the base at their first ends and pivotally secured to the marking carriage at their second ends at spaced apart points, thereby forming an articulated quadrilateral which is so aligned that the arms are swivellable transversely with respect to said path between two limit positions thereby carrying the marking carriage transversely with respect to said path so

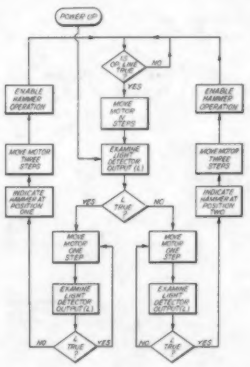


that said marking means can apply marks at at least two locations on said surface which are mutually laterally spaced with respect to said path.

4,379,428
HAMMER LOCATING AND OPERATIONAL MEANS

David E. Schmulian, Woodland Hills, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 11, 1980, Ser. No. 168,945
Claims priority, application United Kingdom, Jul. 24, 1979, 7925811
Int. Cl.³ B41J 9/12
U.S. Cl. 101—93.09 11 Claims



1. A chain impact printer comprising:

an array of hammers, each hammer being positionable at a plurality of hammer operating positions along a line of printing, said array of hammers being movable;

a stepping motor operable to position said array of hammers along said line of printing, said stepping motor having a plurality of step positions between each adjacent pairs of hammer operating positions along said line of printing;

a position transducer cooperating with said stepping motor to indicate when said array is a first predetermined number of steps away from one of said plurality of operating positions; and,

a controller executing a movement sequence to move said array from a first operating position to the next adjacent operating position, said movement sequence including commanding said stepping motor to perform said first predetermined number of steps, said controller receiving the output of said position transducer at the end of said first predetermined number of steps to indicate a first state if said hammer array is in the correct stepping position to

subsequently arrive correctly at the next operating position, and a second state if the hammer array is not in its correct stepping position to arrive correctly at the next operating position, said controller responding to said position transducer output being a first state by commanding said stepping motor to move a second predetermined number of steps to bring said array to said next adjacent operating position, and responding to said second state to command said motor to perform a position correction sequence by commanding said stepping motor to perform individual steps and monitoring said output of said transducer for each of said individual steps until a step is found at which said transducer provides a first state indication that said hammer array is in the correct stepping position.

4,379,429

HEIGHT AND INCLINATION ADJUSTABLE SUPPORT SHELF

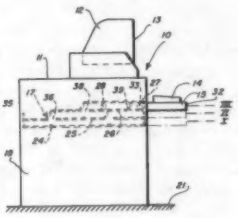
Bernd Gubbe, Nuremberg; Klaus-Dieter Krause, Oberasbach; Rudolf Neidhardt, Nuremberg, and Otto Schonemann, Furth, all of Fed. Rep. of Germany, assignors to Triumph-Adler A.G., Nuremberg, Fed. Rep. of Germany

Filed Feb. 4, 1981, Ser. No. 231,459

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014276

Int. Cl.³ A47B *21/02, 21/03*

U.S. Cl. 108—5 **2 Claims**



1. A work station comprising a platform and spaced legs supporting said platform,

multitrack roller guide means mounted on said legs below said platform, and

a shelf having a first pair of rollers and a second pair of rollers spaced forwardly of said first pair of rollers for cooperation with said roller guide means to guide movement of said shelf to selected pulled out heights and inclinations,

said roller guide means having lower guide tracks and vertically spaced upper guide tracks for guiding said pairs of rollers during forward movement of said shelf to selected pulled out positions and rearward movement to a pushed in storage position,

said lower guide tracks defining said pushed in shelf storage position whereat said shelf is spaced below said platform by a distance sufficient to accommodate the height of a machine supported on said shelf,

said upper guide tracks each having a first pair of openings and a second pair of openings spaced forwardly of said first pair of openings to allow said first and second pairs of rollers to be moved into said upper guide tracks,

said first and second pairs of rollers being spaced from one another a distance less than the distance between said first and second pairs of openings whereby only one pair of rollers at a time can be switched from said lower to said upper guide tracks upon manipulation of said pulled out shelf about the other pair of rollers, thereby to establish a selected height and inclination thereof relative to said platform, and

inclines terminating said upper guide tracks,

said inclines extending upwardly and forwardly from the rear edges of said pairs of openings to automatically direct pairs of rollers in said upper guide tracks to said lower guide tracks when said shelf is moved rearwardly toward said pushed in storage position.

4,379,430

CLAMP-BOLT SHELVING

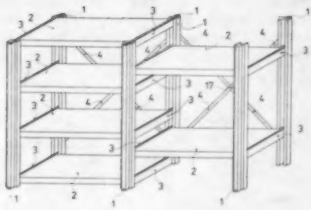
Friedrich Ruschitzka, Im Bruhl (ohne Nummer), 6921 Zuzenhausen, Fed. Rep. of Germany

Filed May 27, 1980, Ser. No. 153,327

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 7916400[U]; Apr. 26, 1980, 3016218

Int. Cl.³ A47B *9/00*

U.S. Cl. 108—107 **15 Claims**



1. Erectable shelving comprising shelving posts, crosspieces, shelving bases, and clamp bolts, wherein said shelving posts each have channel-section-shaped legs and bores are drilled in the legs of the channel-section-shaped shelving posts, between the legs of at least two shelving posts there is placed a crosspiece, said crosspiece being of channel-section-shaped cross-section and having obliquely downwardly and outwardly extending slotted crosspiece holes lying opposite the bores in said legs, a clamp bolt being placed in the bores and in the slotted cross-piece holes, said bores and said slotted crosspiece holes lying opposite one another, and each of the channel-section-shaped shelving posts has at the outer ends of its legs a tubular section provided on the outside with bores and on the inside with slotted holes extending parallel to the flange in the legs.

4,379,431

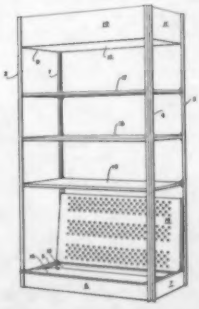
SHELVING ASSEMBLY

Joseph J. Clement, Bradenton, Fla., assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 24, 1977, Ser. No. 827,227

Int. Cl.³ A47B *57/06*

U.S. Cl. 108—111 **2 Claims**



1. In combination, a plurality of support posts, a plurality of shelves disposed one above the other and supported by said

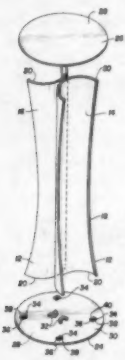
support posts, support structure connected with said support posts for supporting a tiltable shelf disposed below said plurality of shelves and having front, back and side edges, said support structure comprising a front base panel having a horizontal support surface arranged to engage and support the front portion of the shelf, a pair of side base panels spaced apart sufficiently to receive the shelf therebetween and with the side edges of the shelf in close juxtaposition thereto, an elongated horizontally disposed primary shelf support ledge disposed at substantially the same level as said support surface of said front base panel and arranged to engage the rear edge of the shelf so as to support the shelf in a substantially horizontal attitude, and an elongated horizontally disposed tilting ledge disposed at a level substantially below said primary shelf support ledge and forwardly thereof and arranged to engage the rear edge of the shelf so as to support the shelf in a rearwardly tilted attitude, the lowermost one of said plurality of shelves being disjointedly mounted on said support posts and being movable to a tilted position at the rear of said tiltable shelf to form a tilted back support therefor.

4,379,432

ARTICLE DISPLAY STAND

Robert D. Grossman, 22 Rivo Alto Dr., Miami Beach, Fla. 33139

Filed Aug. 6, 1980, Ser. No. 175,783
Int. Cl.³ A47B 3/06
U.S. Cl. 108—153 8 Claims



1. An article display stand including a pair of substantially identical vertical support members and a pair of substantially identical horizontal support members, each of said horizontal support members including retaining means on one side thereof to hold said vertical support members in position between said horizontal support members, each of said vertical support members is an integral molded element having a pair of longitudinal side edges, and said retaining means comprises four separate elements adapted to hold a portion of said side edges and each of said retaining means elements comprises a pair of leg members connected by a bight portion and said portion of said side edges is frictionally held between said leg members.

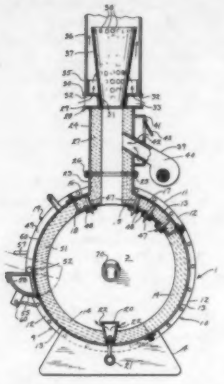
4,379,433

INCINERATOR

Gordon H. Hoskinson, 186 Mayfair Rd., Floral Park, N.Y. 11001

Division of Ser. No. 81,686, Oct. 4, 1979, Pat. No. 4,291,633.
This application Sep. 15, 1981, Ser. No. 302,404
Int. Cl.³ F23B 5/00
U.S. Cl. 110—214 5 Claims

1. As incinerator, comprising a housing defining a combustion chamber, a stack connected to the combustion chamber for discharging waste gases of combustion, said stack including a lower stack section and an upper stack section spaced above the lower section, a ring structure disposed between the lower end of the upper stack section and the upper end of the lower stack section and having a central opening, said ring structure including a tapered flange bordering said central opening, said flange diverging in an upward direction, an upwardly diverging sleeve freely supported on the ring structure and disposed concentrically of said tapered flange, said sleeve having a plurality of perforations, and air inlet means associated with



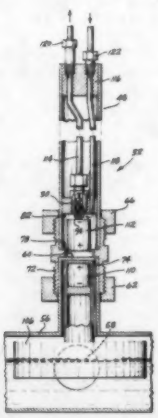
said ring structure for providing communication between the atmosphere and the upper stack section, waste gases of combustion passing upwardly from said lower stack section through said sleeve causing an aspirating effect to draw air from the atmosphere through said air inlet means and into said upper stack section and into said perforations to effect a final combustion zone for the waste gases of combustion, expansion of said sleeve due to heating causing the sleeve to move upwardly relative to said flange.

4,379,434

LIQUID LEVEL SENSOR AND ALARM SYSTEM

Petur Thordarson, 13700–42nd Pl. N.E., Seattle, Wash. 98125

Filed Jun. 10, 1980, Ser. No. 158,288
Int. Cl.³ G01F 23/08
U.S. Cl. 116—228 23 Claims



1. Apparatus for determining a liquid level condition of a liquid within a holding tank, comprising:

a float adapted to be positioned on a body of liquid within a liquid holding tank, including a first permanent magnet;

means defining a chamber partitioned in a fluid tight manner from the body of liquid;

a second permanent magnet located within said chamber in line with said first permanent magnet;

means forming a gas inlet port for said chamber and means forming a gas outlet port for said chamber; and

signal means comprising a normally closed valve positioned within one of said ports, said valve including a normally extended valve stem which is in line with said second permanent magnet and is depressible to operate the signal means and which projects into said chamber and when depressed opens said valve;

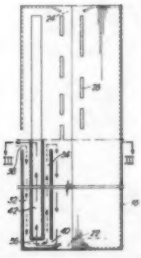
wherein the float and the two magnets are so positioned that as the liquid level in the liquid holding tank moves towards said chamber the first permanent magnet is moved by the float towards the second permanent magnet, and wherein the two permanent magnets have like poles facing towards each other, so that when the first permanent magnet is moved a predetermined amount towards the second permanent magnet, the two magnets will tend to repel each other and in response the second magnet will be urged into contact with the valve stem, moving such valve stem into a signal operating position.

4,379,435

DRYING OVEN FOR INDEFINITE LENGTH MATERIAL

Jong-Hein Walling, Beaconsfield; Gerald R. Arbuthnot, Chateauguay, and Michel Gervais, Verdun, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 19, 1981, Ser. No. 312,652
Int. Cl.³ B05C 3/172, 11/00
U.S. Cl. 118—643 **4 Claims**



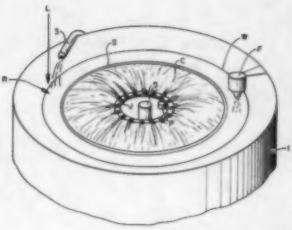
1. A drying oven for an indefinite length of material comprising a structure defining a drying chamber having an inlet and an outlet for the indefinite length passing through the oven, heating means within the chamber to directly dry the material, the chamber surrounded by an annular heat exchanger comprising a plurality of heat exchange members which between them define and separate flow passages extending axially of the chamber and around the chamber, at least a first of the passages being a flow passage for incoming gas, having an inlet for said gas and having an outlet leading into the chamber at a first location, and a second of the passages being a flow passage for outgoing gas from the chamber, having a gas inlet leading from the chamber at a second location spaced from the first location to cause gas flow through said chamber to pass across said heating means, said second passage also having a gas outlet to effect flow of gas heated in the chamber outwardly from said chamber, the heat exchange members provided to cause heat transfer from outgoing gas in said second passage to incoming gas in the first passage.

4,379,436

WATER-TURBULENCE LIGHT-SHIELDING METHOD AND APPARATUS FOR CONFINED-VOLUME FISH GROWTH AND THE LIKE

Albert H. Knowles, Concord, N.H., assignor to Robert H. Rines and Carol M. Rines, both of Concord, N.H., part interest to each

Filed Aug. 20, 1981, Ser. No. 294,474
Int. Cl.³ A01K 61/00
U.S. Cl. 119—3 **9 Claims**



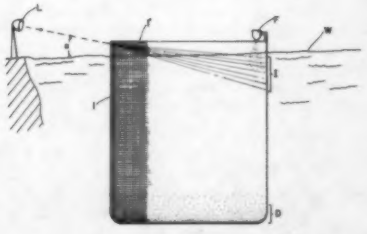
1. A method of providing at least a partially light-shielded surface area in a confined fish-holding water-circulating volume, that comprises, producing turbulence over a selected area of predetermined defined shape occupying a substantial portion of said surface that reduces the amount of light entering the volume under said selected area and thereby provides a uniform light-subdued region thereunder, by agitating the surface of said volume over said selected area; illuminating relatively calm regions external to said selected area; and applying feed to said calm regions while continuing agitation over said selected area.

4,379,437

PROCESS AND SYSTEM FOR ACCELERATED GROWTH OF SALMONIDS AND THE LIKE IN DEEP-WATER CAGES AND SIMILAR WATER VOLUMES

Albert H. Knowles, Concord, N.H., assignor to Robert H. Rines and Carol M. Rines, both of Concord, N.H., part interest to each

Filed Aug. 20, 1981, Ser. No. 294,769
Int. Cl.³ A01K 61/00
U.S. Cl. 119—3 **10 Claims**



8. A system for accelerated fish growth having, in combination with a fish-holding volume through which water circulates and into which feed is applied at one or more predetermined locations, means for bounding the bottom strata of said volume at a water depth at which daylight from above the said volume is attenuated to the degree that said bottom strata are substantially dark; means for producing and directing artificial illumination after daylight hours, and if desired during overcast daylight conditions as well, across upper surface transverse strata of said volume including said predetermined feed

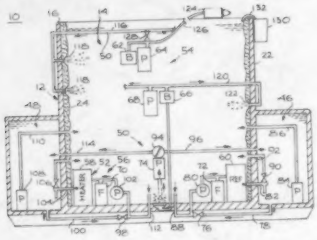
application locations to provide a defined diffuse laterally illuminated near-surface feed area as viewed upwardly from said dark bottom strata, and without introducing artificial light into the dark bottom strata; and means for producing feed application at said predetermined locations beyond daylight hours and during the artificial illumination.

4,379,438

HORSE SPA

Richard Peardon, 22100 Burbank Blvd. F-152, Woodland Hills, Calif. 91367

Filed Oct. 20, 1980, Ser. No. 199,030
Int. Cl.³ A61D *11/00*; A01K *29/00*
U.S. Cl. 119—29 **13 Claims**



11. An improved portable horse spa, said spa comprising, in combination:

(a) a hollow housing adapted to be placed on the ground and defining:

i. a horse therapy compartment having a closed bottom, closed sides and closed ends, at least one of said ends having an openable door, said therapy compartment and door being watertight,

ii. a plurality of integral storage chambers adjacent to said therapy compartment bearing water for said therapy compartment and stabilizing said housing against tilting; and

iii. at least one of said chambers holding hot water and another of said chambers holding cold water therein;

(b) water temperature regulating means in said housing;

(c) water circulation means in said housing connected to said therapy compartment, temperature regulating means and said water chambers for movement of water therebetween;

(d) remote control means disposed on the outside of said housing and connected to said circulations means and said temperature regulating means for control thereof; and

(e) water purification means in said housing connected to said water circulation means and/or said therapy compartment, wherein said therapy compartment includes ports and wherein said spa includes moveable high intensity lamps which can beam selected radiation into said therapy compartment through said ports.

4,379,439

ANIMAL FEEDER

Robert P. Baur, 8425 Filion Rd., Pigeon, Mich. 48755

Filed Sep. 14, 1981, Ser. No. 302,253
Int. Cl.³ A01K *5/02*
U.S. Cl. 119—52 B **7 Claims**

1. An aminal feeder for an animal cage assembly formed of a plurality of animal cages arranged side-by-side in a horizontal alignment, with a feed trough extending along the front of the animal cages, the animal feeder comprising:

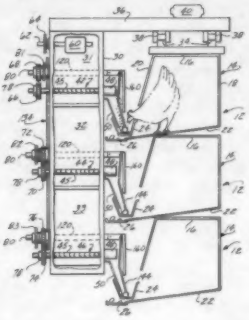
carriage means movably disposed for horizontal movement along the front of the cage assembly, the carriage means including a hopper for storing feed;

feed means carried by the carriage means for dispensing feed from the hopper into the feed trough;

first drive means for activating the feed means, the first drive means including an electric motor and means driven by the electric motor and operatively coupled to the feed means for activating the feed means;

control means, carried by the carriage means, for deactivating the feed means when predetermined levels of feed are detected in the feed trough; and

detector means for detecting the level of feed remaining in



the feed trough as the carriage means traverses along the cage assembly, the detector means being carried by and causing pivotal movement of the control means when a predetermined level of feed is detected in the feed trough;

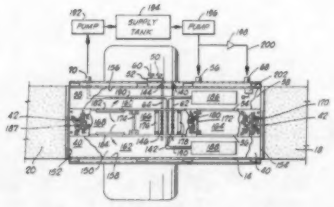
the control means decoupling the feed activating means from the feed means to stop dispensing of feed when the predetermined level of feed trough is detected.

4,379,440

LIVESTOCK SPRAY APPARATUS

Dale E. Thedford, Enid, and Gil C. Wilson, Kremlin, both of Okla., assignors to AG Industries International, Ltd., Enid, Okla.

Filed May 22, 1981, Ser. No. 266,162
Int. Cl.³ A01K *13/00*, *29/00*
U.S. Cl. 119—159 **13 Claims**



1. Apparatus for livestock spraying which functions with a source of spray solution, comprising:

chute housing means having opposite sides and roof portions and defining a longitudinal chute way from a livestock entry end to a livestock exit end;

chassis frame means affixed to and supporting opposite sides of said chute housing means;

solution spray means disposed longitudinally centrally within said chute housing means and directed across said chute way;

plural sector filter tank means having a perforate grating thereover and being formed as first sector means disposed at the livestock entry end for entrapment of solid waste, a second sector means disposed generally longitudinally centrally in baffled communication with said first sector means for primary collection of recycled solution, and third sector means disposed adjacent the livestock exit end

in screen filter communication with said second sector means;

at least one holding tank formed as a fluid-tight longitudinal receptacle integral with said chassis frame means and disposed laterally adjacent to said filter tank means in screen filter communication with said third sector means;

means conducting solution from said at least one holding tank to said source; and

means conducting solution from said source to said solution spray means.

4,379,441

SYSTEM FOR CONTROLLING THE AIR-FUEL RATIO IN A COMBUSTION ENGINE

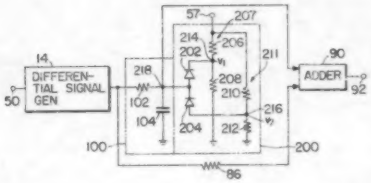
Makoto Anzai, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Division of Ser. No. 625,666, Oct. 24, 1975, abandoned. This application Dec. 21, 1976, Ser. No. 752,961

Claims priority, application Japan, Oct. 25, 1974, 49-123110; May 13, 1975, 50-55500

Int. Cl.³ F02B *75/10*

U.S. Cl. 123—440 **2 Claims**



1. In a closed loop mixture control system for an internal combustion engine including exhaust means, means for generating a first signal representative of the deviation of the air-fuel ratio within said exhaust means from a desired air-fuel ratio, an integration circuit for providing integration of said first signal and mixture supplying means responsive to the output of said integration circuit to supply air and fuel in a variable ratio to said engine, wherein said integration circuit comprises:

an RC circuit, including a capacitor, for generating a second signal representative of the nonlinear integration of said first signal;

reference setting means for setting a predetermined voltage level, said predetermined voltage level being determined such that the nonlinear integration of said first signal by means of said RC circuit equals to the linear integration of said first signal by means of a linear integrator; and

polarity sensitive means including clamping means for passing signals of a given polarity applied thereto when said predetermined voltage level is reached, the voltage developed across said capacitor of said RC circuit being clamped at said predetermined voltage level.

4,379,442

ELECTROMAGNETICALLY CONTROLLED FUEL INJECTION PUMP

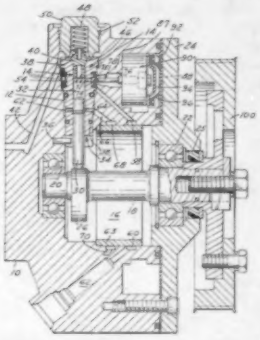
Aladar O. Simko, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 193,985, Oct. 6, 1980, abandoned. This application Sep. 3, 1981, Ser. No. 299,253

Int. Cl.³ F02M *59/00*

U.S. Cl. 123—458 **5 Claims**

1. A fuel injection pump of the spill port type having a housing having a central cavity therein receiving a rotatable engine driven camshaft, a stationary pump plunger barrel projecting radially from the camshaft through the housing and having a bore containing a plunger movable therein, cam means on the camshaft engageable with the plunger to move the plunger axially along its bore through a fuel pumping stroke, the barrel bore being of uniform diameter and forming at one end a housing for a spring closed fuel pressure opened fuel delivery valve contained therein and blocking the one end thereof connected to a fuel injection line, the plunger and delivery valve being axially spaced along the barrel bore to define a fuel chamber therebetween, the barrel having a fuel inlet-spill port opening through the wall of the barrel into the fuel chamber and constituting a valve seat, a source of supply fuel under a low pressure connected to the inlet-spill port, an



electromagnetically controlled spill port control valve movably mounted with respect to the spill port valve seat and selectively operable to control the buildup and duration of pressure in the fuel chamber to a level effecting opening of the delivery valve and injection of fuel into the injection line upon movement of the plunger through its pumping stroke, the spill port valve including a ball universally seatable on the valve seat to be self-aligning with respect to the valve seat, a solenoid engageable with the spill port valve, and spring means biasing the ball to an unseated position.

4,379,443

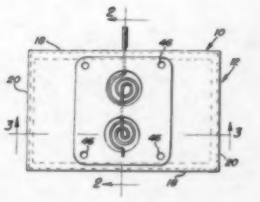
INTAKE MANIFOLD MOUNTED AIR AND FUEL MIXTURE HEATER

Charles C. Granger, 1203 Chestnut St., Henderson, N.C. 27536

Filed Sep. 2, 1980, Ser. No. 183,039

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—549 **11 Claims**



1. In combination with a combustion engine of the type including air and fuel mixture induction passage means, an air and fuel mixture heater for said combustion engine, said heater including structure defining a transversely enlarged thin hollow chamber in said passage means including a first pair of closely spaced, parallel and registered opposite side walls having at least generally registered inlet and outlet air and fuel mixture openings formed therethrough opening upstream and downstream into said passage means, said chamber also including peripheral wall portions extending between corresponding peripheral edge portions of said side walls, a baffle plate

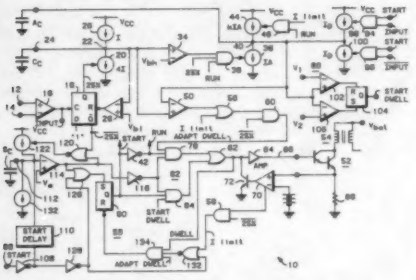
mounted in said chamber spaced intermediate and generally paralleling said side walls and registered with and extending outwardly beyond all marginal portions of said openings, said baffle plate including at least one pair of opposite marginal portions thereof spaced inwardly of the opposing peripheral wall portions of said chamber each marginal portion defining with the opposing peripheral wall a passage therebetween, said baffle plate further including a plurality of additional openings formed. Therethrough spaced inwardly from said marginal portions, and a generally flat heating coil assembly disposed in said chamber between one side of said baffle plate and the opposing side wall of said chamber in registry with the opening in said opposing housing side wall, said heating coil assembly including a main coil portion consisting of a plurality of continuous spiral convolutions, said main coil portion being of a plan area at least substantially equal to the cross sectional areas of the opening with which said main coil portion is registered.

4,379,444

START-TO-RUN CIRCUIT FOR AN ELECTRONIC IGNITION SYSTEM

Howard Weber, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 13, 1981, Ser. No. 253,423
Int. Cl.³ F02P 9/00
U.S. Cl. 123—609 **7 Claims**



1. A start-to-run circuit suitable to be utilized in an adaptive dwell ignition system for an engine having an adative dwell capacitor which provides a dwell control signal that varies the excess dwell time in response to variations in engine rpm, an amplifier which is rendered conductive in response to the dwell control signal during each firing cycle period to provide dwell current to charge an ignition coil and a feedback circuit for limiting the dwell current to a predetermined magnitude prior to discharge of the coil, comprising:

start dwell circuit means coupled with the adaptive dwell capacitor which is responsive to the ignition system being in a start mode of operation for charging and discharging the adaptive dwell capacitor for producing a first logic signal at an output thereof during a predetermined interval of each firing cycle period;

logic gate means coupled with both the ignition system and said output of said start dwell circuit means which is responsive to said first logic signal for providing first and second output signals, said first output signal rendering the amplifier conductive and said second output signal being produced while the dwell current is not being limited by the feedback circuit; and

logic circuit means coupled with the ignition system, said start dwell circuit means and said logic gate means which is responsive to a start command signal supplied thereto at an input for causing said ignition system to be in a start mode of operation, said logic circuit means being responsive to the termination of said start command signal in combination with receiving said second output signal from said logic gate means for inhibiting said start dwell circuit means and causing the ignition system to transition to a run mode of operation only during a predetermined period of the firing cycle period wherein said logic gate means is enabled by the ignition system.

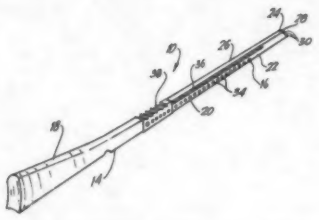
7. In an adaptive dwell ignition system including an adaptive dwell capacitor which sets the excess dwell time in a firing cycle of the ignition system, a start-to-run transitioning circuit wherein the improvement comprises the start-to-run transitioning circuit being coupled to the adaptive dwell capacitor which is responsive to the system being in a start mode only for causing the charge and discharge of the adaptive dwell capacitor to provide start retard, the start-to-run transitioning circuit being responsive to the termination of the start mode for providing transitioning of the ignition system to a run mode only during a predetermined portion of the firing cycle.

4,379,445

RUBBER BAND RIFLE

Vincent LoBiondo, 8873 19th Ave., Brooklyn, N.Y. 11214

Filed Mar. 19, 1981, Ser. No. 245,425
Int. Cl.³ F41B 7/00
U.S. Cl. 124—19 **3 Claims**

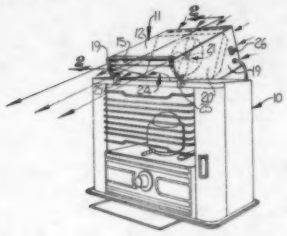


1. A rubber band rifle for shooting one or a plurality of rubber band members comprising a body having a forward barrel portion and a rear shoulder portion, a forward end wall of said barrel portion having a plurality of horizontal grooves disposed therein, one end of each of said rubber band members being disposed in one of said horizontal grooves in said forward end wall, a slide mechanism movably disposed on said forward barrel portion, said slide mechanism comprising a top and a pair of downwardly extending walls, an upper surface of said top of the slide mechanism having a plurality of notches disposed therein, each said rubber band members being stretched rearwardly from said forward extending wall of said barrel portion, wherein the other ends of said rubber band members being disposed in one of said notches, said forward barrel portion having a pair of sidewalls, each said sidewall having a longitudinally aligned groove therein and a boss disposed on the interior surface of each downwardly extending wall of said slide mechanism, each said boss being disposed in one of said longitudinally aligned grooves in said sidewalls of said barrel portion, means for locking said slide mechanism in a fixed position on said forward barrel portion, said locking mechanism comprises said barrel portion having a plurality of transverse holes therethrough, said holes being aligned in a longitudinal aligned row along said barrel portion, a plurality of openings through each downwardly extending wall of said slide mechanism, each set of said openings being aligned in a longitudinal row along each said downwardly extending wall of said slide mechanism, one of said holes being alignable with said openings, and a pin member, said pin member being insertable into said hole being aligned with said openings.

4,379,446
FAN ACCESSORY FOR HEATER

Donald G. Porter, 8620 Wilkinson Blvd., Charlotte, N.C. 28208

Continuation-in-part of Ser. No. 365,594, Apr. 5, 1982. This application Jul. 21, 1982, Ser. No. 400,398
Int. Cl.³ F24H 3/02
U.S. Cl. 126—110 B 8 Claims



3. A fan accessory for recovering heated air generated by a heater and comprising:

housing means for directing air flow and having an upper wall, a rear wall defining an ambient air inlet, a lower wall defining a heated air inlet, and a front portion defining an air outlet for ambient air and heated air,

divider wall means extending within said housing means and cooperating therewith so as to define juxtaposed ambient and heated air passageways isolated from each other for separate flow of heated air and ambient air through said housing means and out of said air outlet,

fan means cooperating with said ambient air passageway for inducing ambient air to enter said ambient air inlet and flow through said ambient air passageway and out of said air outlet,

said divider wall means being so arranged relative to said housing means that the flow of ambient air out of the ambient air passageway causes an aspirating effect on the flow of heated air out of said air outlet by inducing the heated air to more rapidly move through said heated air passageway and to project further away from said housing means to thereby permit blending of the ambient and heated air to take place over a greater distance from said housing means and to provide a more efficient operation of a heater, and

heater engaging means on said housing means for positioning said housing means to receive through said heated air inlet, heated air generated by a heater.

4,379,447
HEAT SAVER FOR HOUSEHOLD HEATERS

Lawrence A. Schott, 15940 Warwick Rd., Detroit, Mich. 48223, and Roger A. Schott, 15060 Seminole, Redford, Mich. 48239

Filed Feb. 27, 1981, Ser. No. 239,063
Int. Cl.³ F24H 3/12; F24B 7/00
U.S. Cl. 126—117 2 Claims

1. A heat saving system for recovering heat from a furnace chimney flue pipe which comprises:

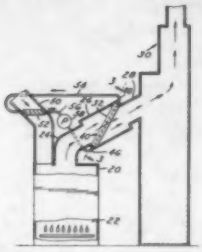
(a) a chamber in said flue pipe through which the flue gases pass,

(b) a first heat exchange coil in said chamber interposed in the path of flue gas,

(c) a cold fluid inlet leading to said furnace,

(d) a fluid in said coil, and

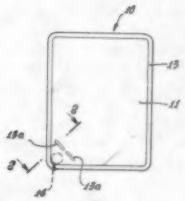
(e) means to connect said coil to said cold fluid inlet to transfer heat from said chimney flue pipe to the inlet fluid to be heated in said furnace, said chamber comprising a rectangular box of fireproof material having an opening at opposite ends to connect to a chimney flue pipe, and said coil being mounted in a rectangular frame extending diagonally from one corner of said box to a diagonally opposite corner in a plane angled to the path between said openings.



4,379,448
TRIGGER TO INITIATE CRYSTALLIZATION

Imants P. Kapralis, 3020 S. Punta Del Este Dr., Hacienda Heights, Calif. 91745, and Harry Krukle, 7023 Bevis Ave., Van Nuys, Calif. 91405

Continuation of Ser. No. 113,356, Jan. 18, 1980, abandoned. This application Feb. 22, 1982, Ser. No. 350,564
Int. Cl.³ F24J 1/00
U.S. Cl. 126—263 3 Claims



1. For use in initiating crystallization of a supercooled salt solution, the combination that includes a flexible container containing said solution, and a trigger located in the container in contact with the solution, said trigger comprising

(a) a thin strip having a perimeter,

(b) said strip having a multiplicity of generally parallel slits formed therein, each slit characterized as having opposed elongated edges which face one another in near touching relation,

(c) the strip further characterized as having two configurations between which it is bendable with snap-displacement causing the slit edges to initiate progressive exothermic crystallization of said salt in the solution,

(d) the strip being in the general form of a dished disc having a central portion and an outer portion surrounding said central portion, the outer portion having a curved periphery,

(e) said slits confined to said outer portion and said central portion being free of said slits, said slits everywhere spaced inwardly from the disc periphery and located in an annular zone extending about said central portion, the slits defining a sector shaped portion of the annular zone located at a side of said central portion, whereby said periphery is free of slit edges which could otherwise penetrate the container, the container consisting of plastic material,

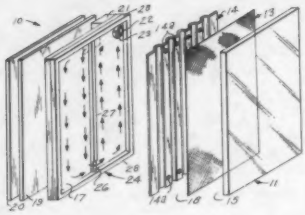
(f) the strip consisting of metal and having molecular structure which is impact oriented.

4,379,449

SOLAR HOT AIR SYSTEM

John W. Wiggins, and Damon E. Moore, both of P.O. Box 138, Dundee, Mich. 48131

Filed Sep. 12, 1980, Ser. No. 186,572
Int. Cl.[3] F24J 3/02
U.S. Cl. 126—449 1 Claim



1. A solar hot air heating system adapted to be installed in an opening within a building disposed between the interior and the exterior of the building comprising:

a perimetric frame secured in said opening and having upper and lower sides;

a light transparent plate secured in said frame and having first and second sides, the first outer side facing the exterior and the second inner side facing the interior;

a single light absorptive corrugated metal sheet plate secured within said frame with the corrugations thereof vertically oriented, said plate having first and second sides, the first side facing the second side of the light transparent plate and being displaced from the first side of the light absorptive plate, the opening of the building, the second side of the optically transparent plate and the first side of the light absorptive plate defining a first air flow passage containing a volume of air which is heated by light energy passing through the transparent plate and absorbed by the light absorptive plate;

a light absorptive mesh secured to the second side of the transparent plate, the metal mesh functioning as a light absorptive means for part of the light energy passing through the optically transparent plate, as a means for preventing reflection of light energy back through the optically transparent plate and as a means for insulating the optically transparent plate from the volume of air to lessen heat flow from the first volume of air out through the transparent member;

a light reflective plate secured within said frame having first and second sides, the first side of the light reflective plate being displaced from and facing the second side of the light absorptive plate, the opening of the building, the second side of the light absorptive plate and the first side of the light reflective plate forming a second air flow passage containing a volume of air;

an insulating plate secured to the second side of the light reflective plate;

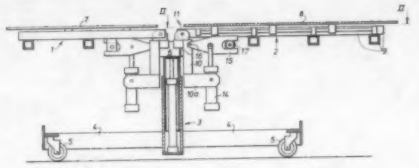
said light reflective plate having an upper inlet opening and an upper separate outlet opening, and said corrugated plate having air circulating apertures at both its upper and lower marginal edges, said apertures being intermediate the plate corrugations and affording communication between said first and second air flow passages; and blower means for circulating air through said first and second air passages, cool air entering said inlet opening, flowing downwardly through said second passage through the lower apertures in said corrugated plate, then upwardly through said first passage and through the upper apertures of said corrugated plate to exit through the outlet opening of said light reflective plate, the air being heated by the single corrugated plate during its flow in opposite directions through the first and second passages.

4,379,450

TRACTION BENCHES

Per-Olof Sjölinder, Tanneforsgatan 3, S-582 24 Linköping, Sweden

Filed Dec. 17, 1980, Ser. No. 217,499
Int. Cl.[3] A61F 5/00
U.S. Cl. 128—74 5 Claims



1. A traction bench for the treatment of the vertebral column and extremities of a human body comprising a table on which a patient to be treated may lie, said table comprising a pair of elongated separate table sections disposed in spaced longitudinally aligned relation to one another, support means attached to at least one of said table sections for mounting said one table section in a manner permitting said one table section to be displaced relative to the other of said table sections in any selected one or more of four different movements, said support means including first means supporting said one table section for translational movement longitudinally relative to said other table section along a first translational axis parallel to the longitudinal axis of said elongated one table section, second means supporting said one table section for translational movement transversely relative to said other table section along a second translational axis that is oriented at right angles to said first translational axis, third means supporting said one table section for tilting movement in a first angular direction relative to said other table section to tilt the plane of said one table section relative to the plane of said other table sections about a first pivotal axis which extends transversely to the direction of elongation of said one table section, and fourth means supporting said one table section for further tilting movement in a second angular direction transverse to said first angular direction to tilt the plane of said one table section transversely relative to the plane of said other table section about a second pivotal axis which extends parallel to the direction of elongation of said one table section, and fixation means on each of said table sections for fixedly securing one portion of the patient's body to one of said table sections and for fixedly securing another portion of the patient's body to the other of said table sections, said fixation means comprising a mounting structure which is adapted to be selectively moved to any one of a plurality of positions on the surface of its associated table section, means for securely attaching said mounting structure to the surface of said table section at the selected position on said surface, and a harness attached to said mounting structure for engagement with a portion of the patient's body adjacent said selected position on the surface of said table section, said mounting structure comprising a circular disc having an elongated bar extending across the diameter thereof, said disc being adapted to be attached to the selected position on the surface of said table section with said bar oriented in any selected one of a plurality of possible directions relative to the side edges of said table section, said harness being attached to said bar.

4,379,451

INTRAMEDULLARY HIP PIN AND CORTICAL PLATE

Philip E. Getscher, 4230 Burnham Suite 140, Las Vegas, Nev. 89109

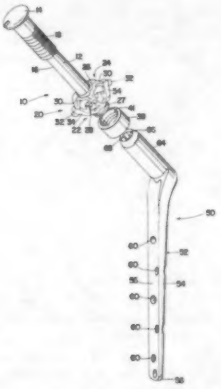
Filed Nov. 4, 1980, Ser. No. 204,063
Int. Cl.[3] A61F 5/04
U.S. Cl. 128—92 CA 2 Claims

1. An intramedullary pin, comprising:

an elongate shaft having a longitudinally extending groove

and a threaded portion formed intermediate its ends, the shaft having an enlarged, flattened end;

an expansible cage adapted to be secured to the shaft, the cage including a first section in the form of a ring encircling the shaft, the ring including a boss extending into the groove, the first section being a generally concave or conical basket including a pair of fingers having reversely bent end portions as well as a pair of legs having openings formed near their ends, the fingers and legs alternating circumferentially of the ring and being spaced 90 degrees from each other, the cage also including a second section, the second section having a generally concave or conical basket the generally concave or conical baskets of the first and second sections having their concave sides facing one another, wherein the fingers extend through openings in the legs to form an interlocking cage;



the bosses of the first and second sections being axially aligned for engagement with the longitudinal groove in the shaft;

a nut engagable with the threads on the shaft and with one of the sections such that, upon tightening the nut, the sections are clamped between the nut and the enlarged end and are compressed axially, thereby expanding the fingers radially outwardly of the shaft;

an elongate section securable to the lateral cortex of the shaft of a femur; and

a tubular portion positioned at an obtuse angle with respect to the longitudinal axis of the elongate section, the tubular portion adapted to receive the shaft in sliding, non-rotating relationship.

4,379,452

PREPACKAGED, SELF-CONTAINED FLUID CIRCUIT MODULE

James H. DeVries, McHenry, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 843,223, Oct. 18, 1977, abandoned. This application Dec. 6, 1979, Ser. No. 100,975

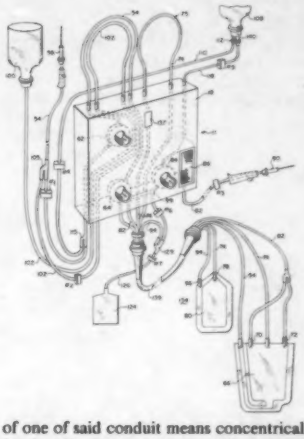
Int. Cl.³ A61M *5/00*

U.S. Cl. 604—6 **32 Claims**

1. A prepackaged, self-contained fluid circuit module selectively movable by an operator into and out of operative association with a pump rotor, said module comprising

flexible first conduit means and flexible first auxiliary conduit means each defining a fluid pathway adapted for communication with a source of fluid, and

housing means having sidewalls peripherally defining a hollow interior and including means on said sidewalls for supporting a portion of each of said conduit means within the confines of said hollow interior and for supporting another portion of each of said conduit means, when said module is out of operative association with the pump rotor, in a predetermined arcuate configuration outwardly bowed from one of said sidewalls and resiliently biased toward an upright freestanding position generally perpendicular to said one sidewall with said outwardly bowed



portion of one of said conduit means concentrically positioned closely adjacent to said outwardly bowed portion of the other of said conduit means to accommodate simultaneous operative contact with the pump rotor when said module is moved into operative association therewith.

4,379,453

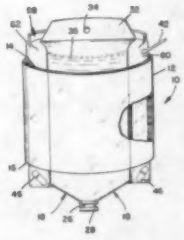
INFUSION SYSTEM WITH SELF-GENERATING PRESSURE ASSEMBLY

Howard C. Baron, 935 Park Ave., New York, N.Y. 10021

Continuation-in-part of Ser. No. 543, Dec. 28, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 186,955

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—145 **19 Claims**



1. For use with a flexible-walled infusion bag storing a supply of fluid to be fed intravenously and having an outlet, an infusion system for dispensing fluid under pressure from said infusion bag comprising:

an outer container having a substantially inextensible wall portion defining an interior cavity sized for removably receiving said infusion bag therein;

an expandable envelope disposed within said cavity adjacent said infusion bag, said expandible envelope being completely sealed and having a normal collapsed condition in which it occupies a minor portion of said cavity; and

manually operable inflation means within said expandible envelope including at least two separate frangible capsules, each of said capsules being independently ruptur-

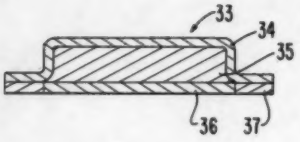
able only by manipulation through the wall of said expandible envelope to generate separate supplies of gas within said expandible envelope, when ruptured, to expand said envelope and squeeze said infusion bag against said inextensible wall portion, thereby dispensing said fluid from said infusion bag through said outlet.

4,379,454

DOSAGE FOR COADMINISTERING DRUG AND PERCUTANEOUS ABSORPTION ENHANCER

Patricia S. Campbell, and Santosh K. Chandrasekaran, both of Palo Alto, Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Feb. 17, 1981, Ser. No. 235,068
Int. Cl.³ A61M 7/00
U.S. Cl. 604—897 **16 Claims**



1. A unit dosage form for coadministering a drug and a percutaneous absorption enhancer to a predetermined area of unbroken skin of a patient for a predetermined time period, the dosage form comprising a body

(a) having a basal surface

(i) of area at least about equal to the area of skin,

(ii) that is adapted to contact the area of skin over the time period, and

(iii) via which the drug and enhancer are presented to the area of skin for absorption thereby;

(b) containing a supply of the drug that communicates with the basal surface to provide drug at the basal surface over the time period such that over a substantial portion of the time period the amount of drug provided is in excess of that which the area of skin is able to absorb;

(c) containing a supply of the percutaneous absorption enhancer that communicates with the basal surface over said time period; and

(d) including means for maintaining the rate at which the enhancer is provided at the basal surface substantially constant over a substantial portion of the time period, the rate being

(i) below the maximum rate the area of skin is able to absorb, and

(ii) sufficient to increase the permeability of the area of skin to the drug such that the drug is absorbed thereby at a rate that provides a therapeutically effective level of the drug in the bloodstream of the patient.

4,379,455

MEDICAL RECEPTACLE WITH DISPOSABLE LINER ASSEMBLY

David W. Deaton, 922 Ruswood Cir., Abilene, Tex. 79601

Division of Ser. No. 113,620, Jan. 21, 1980, Pat. No. 4,321,922.
This application Sep. 14, 1981, Ser. No. 301,527
Int. Cl.³ A61F 5/44
U.S. Cl. 604—320 **11 Claims**

1. Apparatus for receiving fluids from the body of a patient comprising:

a rigid outer canister means having an open mouth defined by sidewalls and a rim extending laterally from a canister sidewall, said rim having a recess formed therein, a gasket disposed within said recess;

a disposable container means for being removably inserted within said canister means, said container means having an open mouth defined by a lip extending laterally from a container sidewall;

a peripheral sealing support lid means removably attachable to said canister means and supporting said container means from said canister rim;

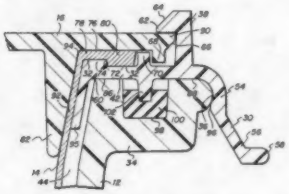
a removable cover means coacting with said sealing support lid means for being retained over said mouth of said canister means;

said cover means sealingly pinching said container lip between said cover means and said lid means;

said cover means having a patient port for receiving fluid from the body of a patient;

said cover means having a vacuum port for effecting a vacuum within said container means for drawing fluid through said patient port for collection in said container means;

said canister rim extending laterally below and outwardly beyond said container lip;



said lid means having a lateral sealing portion between said container lip and said canister rim, said sealing portion having a downwardly extending annular lug engaging said gasket disposed in said rim;

said lid means having a securement portion engaging said cover for securing said cover in sealing engagement with said container lip therebelow;

said lid means having a portion releasably abutting said canister rim;

said cover means extending laterally beyond said container lip;

said securement portion of said lid engaging the outer edge of said cover means;

said canister rim extending laterally beyond said outer edge of said cover means; and

said container lip and said sealing portion of said lid means being annularly interfitted in detented registry with the combined vertical thickness thereof substantially constant;

said container means, lid means and cover means forming a single, separable unit from said canister means.

4,379,456

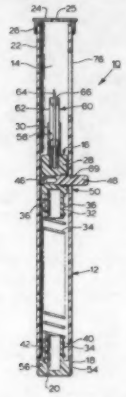
LANCET INJECTOR

William D. Cornell, Ballwin, and Carnot Evans, St. Louis, both of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Jun. 29, 1981, Ser. No. 278,024
Int. Cl.³ A61B 17/32
U.S. Cl. 128—314 **17 Claims**

1. A lancet injector comprising an elongate housing, a lancet holder slidable in said elongate housing and adapted to have a lancet releasably connected thereto for piercing the skin, spring means in said housing having one end connected to said holder and the other end engaging a proximal end portion of said housing, control means connected to said holder for moving said holder, said control means being movable to move said holder linearly against the force of said spring means to a releasable retracted position thereby compressing said spring means, said control means being movable to release said holder from said retracted position so that the force of said spring means and the inertia of said holder during movement thereof

moves said holder linearly toward a distal end portion of said housing to a lancet piercing position in which said spring



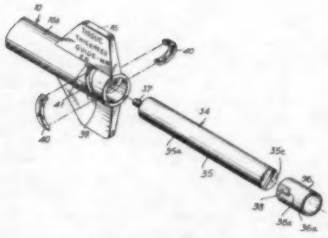
means is tensioned to move said holder proximally from said piercing position.

4,379,457

INDICATOR FOR SURGICAL STAPLER

Roy D. Gravener, Bethany; Alfred F. De Carlo, Stamford, and Douglas G. Nolles, New Canaan, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Feb. 17, 1981, Ser. No. 234,720
Int. Cl.³ A61B *17/04, 17/08*
U.S. Cl. 128—334 R **13 Claims**



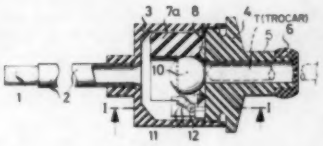
1. In a surgical stapler, provided with:
(a) an anvil;
(b) a staple carrying assembly, located proximally of the anvil; the staple carrying assembly being adapted to be activated, so that its staples are urged distally against the anvil to staple tissue between the anvil and the staple carrying assembly;
(c) a threaded rod, adapted to move axially and connected to the anvil or to the staple carrying assembly;
(d) rotatable moving means, located proximally of the staple carrying assembly and threadedly engaged with the threaded rod, for moving the threaded rod axially upon rotation of the moving means; the moving means being rotatably connected to the anvil, if the threaded rod is connected to the staple carrying assembly, or to the staple carrying assembly, if the threaded rod is connected to the anvil; and the portions of the threaded rod, threadedly engaged with the moving means, being located within the moving means; and
(e) means, connected to the threaded rod and the moving means, for indicating that the axial position of the threaded rod relative to the moving means is such that the spacing between the anvil and the staple carrying assembly is within a range of spacings that is generally suitable for stapling tissue between the anvil and the staple carrying assembly;
the improved indicating means (e) which comprises:
an indicator marking which is connected to the threaded rod and is adapted to move axially within the moving means between the threaded rod and the moving means; and
a helical surface in the lateral surface of the moving means which faces proximally and which substantially parallels the helical path of the indicator marking, relative to the moving means, when the moving means is rotated and the indicator marking is located axially of the helical surface;
the indicator marking not being laterally covered by the moving means and being continuously visible proximally of, and adjacent to, the helical surface as the moving means is rotated when and only when the spacing between the anvil and the staple carrying assembly is within the range of generally suitable spacings.

4,379,458

TROCAR SLEEVES HAVING A BALL VALVE

Siegfried Bauer, Heidelsheim, and Manfred Boebel, Oetisheim, both of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Division of Ser. No. 959,561, Nov. 13, 1978, Pat. No. 4,233,982.
This application Jul. 14, 1980, Ser. No. 168,070
Int. Cl.³ A61B *17/34;* A61M *5/00*
U.S. Cl. 604—264 **1 Claim**



1. A hollow surgical trocar sleeve instrument adapted to be inserted into the abdomen to enable another surgical instrument to be passed therethrough into the abdomen of the patient, and comprising an outer cylindrical metal sleeve and an inner concentric insulating plastic sleeve joined to one another in concentric relation, the tip of the inner insulating plastic sleeve extending considerably beyond the tip of the outer metal sleeve so that there is a sleeve portion of insulating plastic material in front of the tip of the metal sleeve without there being metal at the distal tip of the trocar instrument, a one-piece plastic housing joined to the rear of the outer metal sleeve, said housing supporting at the proximal end a seal cap of resilient material having a central aperture therethrough aligned to the bore of the inner plastic sleeve for capturing the other instrument by a seal fit when passed therethrough.

4,379,459

CARDIAC PACEMAKER SENSE AMPLIFIER

Marc T. Stein, Tempe, Ariz., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 9, 1981, Ser. No. 252,537
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **3 Claims**

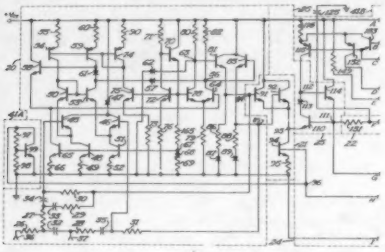
1. A cardiac signal amplifier of the type having terminal means for receiving input signals, output means for providing an output signal upon detection of natural heart signal and blanking signal receiving means for blanking the signal amplifier for a predetermined blanking time interval, comprising:
reference level integrating circuit means for establishing a reference level signal representative of sensed extraneous repetitive noise input signals received from said terminal means;
instantaneous level integrating circuit means for establishing

an instantaneous level signal representative of non-recurring signals received from said terminal means;

means responsive to said reference level and instantaneous level signals for providing said output signal when said instantaneous level signal exceeds said reference level signal by a predetermined signal level;

current supply means for establishing a predetermined minimum signal level on said reference level and instantaneous level integrating circuits in the absence of any signal inputs on said terminal means and for establishing said reference and instantaneous signal levels on said integrating circuits in the presence of noise and heart signals; and

comparator means having a first input coupled to said reference level integrating circuit means and a second input coupled to said instantaneous level integrating circuit means and an output coupled to said current supply means and operative during blanking of said signal amplifier for maintaining said instantaneous signal level nearly equal to said reference signal level during blanking of said sense amplifier.

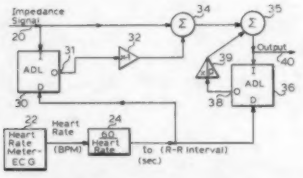


4,379,460

METHOD AND APPARATUS FOR REMOVING CARDIAC ARTIFACT IN IMPEDANCE PLETHYSMOGRAPHIC RESPIRATION MONITORING

Neil H. K. Judell, 509A Lafayette Rd., North Kingston, R.I. 02852

Filed Sep. 18, 1980, Ser. No. 188,392
Int. Cl.³ A61B 5/08
U.S. Cl. 128—671 **4 Claims**



1. In an impedance plethysmographic apparatus of the type for monitoring respiration of a patient including means for measuring an impedance signal generated by changes occurring in the patient's chest, wherein the improvement comprises:

means for removing artifact from the impedance signal caused by cardiac activity in the chest including;

filter means which produces an output signal dependant only upon respiration activity in the patient's chest by removing any signals from said output signal caused by cardiac activity which is substantially periodic in character, said filter means receives as input an impedance signal which is a function of both cardiac and respiration activity, said filter means adapted to filter said input impedance signal so that said output signal is a function of only respiration activity,

a first rate means for providing a heart rate signal to said filter means,

said filter means including;

a first analog filter means for receiving said impedance signal as input, and

a second analog filter means for providing said output signal, said second analog filter means arranged in a cascaded, time-delay arrangement with said first filter means,

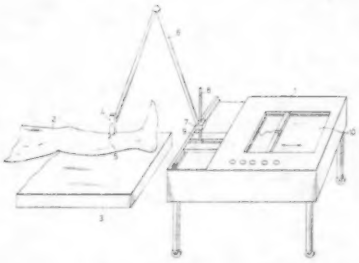
said output signal being a summation of outputs of said first filter means and said second analog filter means as a function of respiration activity with respect to time.

4,379,461

THERMOGRAPHIC APPARATUS

Erling S. Nilsson, Vitmaravägen 77, Upplands Väsby, and Staffan G. Zetterquist, Vesslevägen 4, Täby, both of Sweden

PCT No. PCT/SE80/00014, § 371 Date Sep. 17, 1980, § 102(e) Date Sep. 8, 1980, PCT Pub. No. WO80/01514, PCT Pub. Date Jul. 24, 1980
PCT Filed Jan. 17, 1980, Ser. No. 204,366
Claims priority, application Sweden, Jan. 17, 1979, 7900434
Int. Cl.³ A61B 5/00, 5/02
U.S. Cl. 128—736 **7 Claims**



1. An apparatus for detecting circulation disturbances in the legs of a patient by measuring and recording the skin surface temperature along the legs of the patient, comprising:

at least one temperature sensor manually movable over the skin surface along the legs of a patient resting with his legs in a substantially horizontal position and capable of sensing the skin surface temperature of the momentarily adjacent portion of the patient's leg and generating an electric signal corresponding thereto;

a movable apparatus frame structure adapted to be located at the feet of a patient under examination;

means mechanically connecting said temperature sensor to said apparatus frame and including signal generating means responsive to the movement of said temperature sensor relative to said apparatus frame and for generating an electric signal representing the position of the temperature sensor along its path of movement;

signal recording means mounted in said apparatus frame for receiving said temperature signal and said position signal and capable of recording the temperature being sensed as a function of the position of the temperature sensor; and

digital signal processing means mounted in said apparatus frame for receiving said temperature and position signals and including data storing means for storing associated values of said temperature and position signals from at least two, different, measured temperature-position-relations and calculating means for comparing the temperature values as a function of the position for said two temperature-position-relations stored in said storing means and for producing signals representing the temperature difference as a function of the position for said two temperature-position relations, said recording means being

capable of receiving said last mentioned signals for recording said temperature difference as a function of the position.

4,379,462

MULTI-ELECTRODE CATHETER ASSEMBLY FOR SPINAL CORD STIMULATION

William N. Borkan, North Miami; Frank M. Savino, Fort Lauderdale, both of Fla., and Joseph M. Waitz, Rye, N.Y., assignors to Neuromed, Inc., Fort Lauderdale, Fla.

Filed Oct. 29, 1980, Ser. No. 201,783
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—786 16 Claims

1. A catheter electrode assembly for insertion through a needle to lie along and stimulate the spinal cord comprising:

a sheath having a distal and a proximal end and an outer diameter of less than approximately 0.05 inches;

at least three in-line electrodes equally spaced along the exterior of said distal end of said sheath to lie in-line along a spinal cord;

at least three in-line terminals at the proximal end of said sheath; and

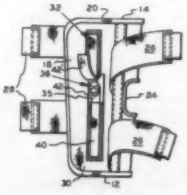
at least three sets of individually insulated stranded stainless steel wires interconnecting an electrode and a respective terminal, the insulation of said sets of wires hermetically seals said sets of wires independent of said sheath without reducing the flexibility of said sets of wires.

4,379,463

MULTICENTRIC KNEE CAGE

Robert H. Meier, and Evelyn Farr, both of Jackson, Mich., assignors to Camp International, Inc., Jackson, Mich.

Filed Apr. 13, 1981, Ser. No. 253,047
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—80 C 13 Claims



1. A knee cage for supporting the knee comprising, in combination, a flexible cover having upper, lower and lateral edges and inner and outer surfaces, said cover including lateral portions, cover securing means mounted upon said cover adapted to secure said cover about the wearer's knee, hinge means defined upon said cover lateral portions, said hinge means each including first and second elongated elements interconnected by a floating pivot, and hinge mounting means releasably mounting said hinge means elements upon said cover outer surface at said lateral portions to permit selective positioning of said hinge means upon the associated cover lateral portion.

4,379,464

COOKED FLAVORS FOR SMOKING PRODUCTS

D. Louise Wu, and James W. Swain, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Feb. 18, 1981, Ser. No. 235,456
Int. Cl.³ A24B *15/30*
U.S. Cl. 131—275 12 Claims

1. A process for preparing a reaction flavor product which comprises the following steps:

(a) preparing a mixture of a reducing sugar and ammonium hydroxide wherein the weight ratio of reducing sugar to ammonium hydroxide is in the range of 5–15:1;

(b) adding a trace amount of a compound selected from the group consisting of an amino acid and a monoamide thereof to said mixture of step (a), wherein the ratio of reducing sugar to said compound is in the range of 200–300:1;

(c) heating said mixture to a temperature in the range of 90° to 105° C.; and thereafter

(d) cooling said mixture to room temperature.

4,379,465

PROCESS FOR PRODUCING A FILTERING STRUCTURE IN PARTICULAR FOR CIGARETTE FILTERS

Francois Coq, Perpignan, France, assignor to Job, anciens Ets Bardou Job & Pauilac, Perignan, France

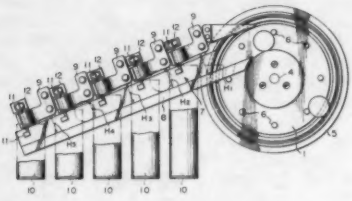
Filed Jul. 23, 1980, Ser. No. 171,569
Claims priority, application France, Jul. 27, 1979, 79 19269
Int. Cl.³ A24D *3/02, 3/04, 3/06*
U.S. Cl. 131—332 19 Claims

1. In a process for producing a filtering structure, in particular for cigarette filters, comprising, mixing fibres of different types to form a homogeneous fibrous mass, one type of the fibres being synthetic and thermofusible at a low melting point and possessing adhesive properties in the molten state, another type of the fibres being absorbent with respect to harmful products of tobacco smoke and stable at the melting temperature of the thermofusible fibres, shaping the fibrous mass into a cylindrical rod which is not yet in a coherent state but is homogeneous and comprises fibrous networks which are closely imbricated relative to each other, the improvement comprising: employing a notable proportion of the thermofusible fibres relative to the absorbent fibres, said thermofusible fibres being elongated in form; and heating the fibrous mixture in said rod to a temperature which leaves the absorbent fibres intact but is sufficiently high for completely melting and fluidifying all the thermofusible substance which is initially present in the form of the elongated fibres to convert same into fine droplets dispersed in the network of absorbent fibres so as to create, by this conversion, on one hand, multiple connection at crossing points of the absorbent fibres which remain stable and, on the other hand, a network of pores which intercommunicate in all directions and are constituted by spaces left empty upon the complete melting of the thermofusible fibres.

4,379,466
COUNTING DEVICE FOR COIN SORTING AND COUNTING MACHINE

Katsusuke Furuya, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,539
Claims priority, application Japan, Dec. 29, 1979, 54/182586[U]
Int. Cl.³ G07D 9/04
U.S. Cl. 133—3 C 5 Claims

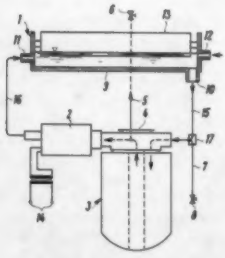


1. A coin sorting and counting apparatus which comprises a coin guiding and sorting mechanism for guiding coins to be sorted and for sorting coins by changing the guided coins' courses at predetermined positions according to the sizes of the coins, a coin feeding mechanism for feeding the coins to the coin guiding and sorting mechanism one by one, and a counting device arranged along the coin guiding and sorting mechanism including a plurality of vibrating elements for being vibrated by the coming coins when the latter come into contact with the former and arranged at the respective positions where the coins change their course, a plurality of vibration sensors connected with the vibrating elements, respectively, for converting the vibrations of said vibrating elements into electrical signals, and calculating means responsive to the electric signals for separately calculating the numbers of the coins having the different sizes.

4,379,467
WASHING UNIT FOR AN OFFSET DUPLICATING MACHINE

Horst Purr, Tennenbronn, Fed. Rep. of Germany, assignor to Mathias Bauerle GmbH, Georgen, Fed. Rep. of Germany

Filed Feb. 13, 1981, Ser. No. 234,431
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005236
Int. Cl.³ B08B 3/04
U.S. Cl. 134—111 16 Claims

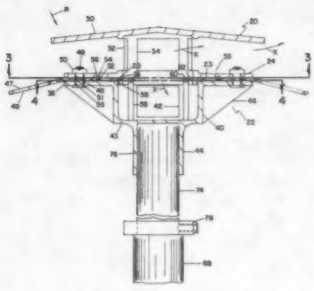


1. A washing unit for an offset duplicating machine, the washing unit comprising a washing tank means for accommodating a cleaning fluid, a washing roll means arranged in the washing tank means so as to enable a portion thereof to be dipped into the cleaning fluid accommodated in the washing tank means, and feeding means for feeding cleaning fluid to the washing tank means, characterized in that a circulatory means independent of the feeding means is connected to the washing tank means for recirculating the cleaning fluid, the circulatory means includes a pump means for pumping the cleaning fluid through the circulatory means, and filter means for filtering the cleaning fluid as the cleaning fluid is recirculated in the circulatory means.

4,379,468
VENTILATOR APPARATUS FOR A FLEXIBLE SHEET

Steve Szukhent, Jr., Montrose, Mich., assignor to Tex-All Company, Inc., Montrose, Mich.

Filed Dec. 30, 1980, Ser. No. 221,214
Int. Cl.³ A45F 1/08
U.S. Cl. 135—88 10 Claims



7. Ventilator apparatus for a flexible sheet, such as a boat covering, having a ventilation aperture through a portion of said sheet intermediate edge portions of said sheet, said covering having inner and outer sides, said apparatus comprising:

cover means for covering said ventilation aperture, said cover means having at least one passage therein for communicating ambient air to said aperture;

an inner support section on the inside of said sheet, having at least one passage therein in fluid communication with said ventilation aperture and said first mentioned passage;

means coupling said cover means and said lower section to secure said cover means and said inner section to said outer and inner side, respectively, of said sheet;

said cover means and said inner section including cooperating, sheet-pinching detent means and detent receiving means, clamped to opposite sides of said sheet, for displacing a portion of said sheet out of the plane of said sheet to inhibit lateral movement of said ventilator apparatus relative to said sheet; and

extensible and retractable support means coupled to said inner support section for supporting said ventilator apparatus at any selected one of a plurality of different levels to position the portion of said sheet adjacent said aperture at any selected one of a plurality of different levels relative to the edge portions of said sheet.

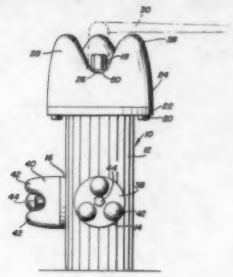
4,379,469
FIRE HYDRANT CAP WITH RECESSED VALVE

Arne J. Britz, 1775 W. 8th St., Brooklyn, N.Y. 11223

Filed Dec. 30, 1981, Ser. No. 335,767
Int. Cl.³ E03B 9/06, 9/14
U.S. Cl. 137—296 4 Claims

1. In combination with a valve body of the type including an upstanding tubular body and an uppr end bonnet secured over the upper end of said body, said bonnet including an upper central wall portion upwardly through which a rotatable valve actuating stem projects and is rotatably received, said bonnet including a plurality of upwardly projecting lobes spaced outwardly from and about said central portion, said stem in-

cluding an upper terminal end defining a non-circular cross section wrench engageable portion for telescopic engagement thereof with a similar non-circular cross section rotary wrench shank terminal end, said lobes projecting above said central portion to an elevation spaced a predetermined distance above the upper terminal end of said stem, the lower portions of said



lobes being spaced apart about said central portion, said bonnet defining water drainage zones thereof extending generally radially outwardly from said central portion between adjacent lobes and disposed at a lower elevation than said central portion, said bonnet being free of obstructions overlying said shank, lobes and water drainage zones, the upper ends of said lobes being smoothly rounded.

4,379,470

CLOSING CAP, PARTICULARLY FOR A MOTOR VEHICLE RADIATOR

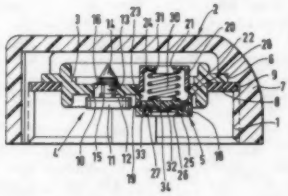
Heiarich Reutter, Waiblingen, Fed. Rep. of Germany, assignor to Reutter Metallwarenfabrik GmbH, Fed. Rep. of Germany

Filed Mar. 2, 1981, Ser. No. 239,552

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1980, 3008002

Int. Cl.³ F16K *17/196*

U.S. Cl. 137—493.8 **11 Claims**



1. A removable motor vehicle radiator closing cap for a vehicle cooling system, comprising, a cap housing having an open end, a resilient valve seat plate extending across said housing and dividing it vertically into a closed top space and a bottom space adjacent the opened end, an excess pressure valve mounted in said plate including a cup-shaped extension portion having an excess pressure opening extending through said seat plate, an excess pressure valve seat defined around the excess pressure opening, an excess pressure valve disc engageable on said valve seat to close the excess pressure opening, a top cover member overlying said excess pressure valve disc and having a top bearing face with a top opening, an excess pressure spring biased between said disc and said bearing face and urging said valve disc toward said excess pressure valve seat, a sub-pressure valve mounted in said plate including a sub-pressure opening through said plate, a sub-pressure valve seat defined around said sub-pressure opening, a sub-pressure valve including a disc portion engageable with the sub-pressure valve seat and having a tappet portion extending through the sub-pressure opening, and a sub-pressure spring biased between said valve seat plate and said tappet urging said disc portion onto said sub-pressure valve seat.

4,379,471

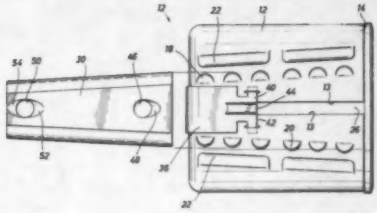
THREAD PROTECTOR APPARATUS

Rainer Kuenzel, 2 Gessner Rd., Houston, Tex. 77024

Continuation-in-part of Ser. No. 957,139, Nov. 2, 1978, abandoned, which is a continuation of Ser. No. 835,750, Sep. 22, 1977, abandoned, which is a continuation of Ser. No. 667,320, Apr. 15, 1976, abandoned. This application Dec. 15, 1980, Ser. No. 216,154

Int. Cl.³ F16L *55/10*

U.S. Cl. 138—89 **9 Claims**



1. A thread protector apparatus adapted to be installed on the threaded end of a pipe comprising:

a flexible member having first and second ends and an elongated portion therebetween which flexible member is capable of being drawn into a tubular configuration in which said first and second ends are spaced by a first distance when said thread protector apparatus is in an unlocked state and spaced by a second distance when said thread protector apparatus is in a locked state;

a resilient material member formed concentrically with said flexible member and adapted to be contacted against threads on the end of a pipe;

first and second tab means formed on said first and second end portions of said flexible member respectively;

a locking means comprising a wedge shaped locking member for operatively contacting said first and second tab means for altering the circumference of said flexible member from a relaxed size corresponding to the unlocked state to a locking size corresponding to the locked state and wherein said tabs and said locking member are formed such that camming of said tabs by said locking member urges said resilient member against the threads of the pipe; and

detent means supported at one end to and extending from said flexible member and having an end portion positioned intermediate said tab members for bias against said locking means.

4,379,472

MAINTAINING THE DIMENSIONAL INTEGRITY OF THERMOPLASTIC TUBING ENDS FOR RECEIVING A LUER

Joel Cunningham, Del Mar, Calif., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 110,261, Jan. 7, 1980, Pat. No. 4,297,316. This application Jul. 13, 1981, Ser. No. 282,908

Int. Cl.³ F16L *55/10*

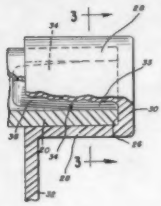
U.S. Cl. 138—89 **2 Claims**

1. A heat sterilizable, sealed tubing assembly comprising

a length of thermoplastic tubing having an exterior portion with a normal exterior diameter and an interior bore with a normal interior diameter which undergoes dimensional distortion at a temperature sufficient to effect heat sterilization thereof, and

an end cap removably engageable on the end of said tubing, said end cap being made of a thermosetting material and including

exterior wall means defining an end wall operative for engagement against the tubing end to seal the interior portin of the tubing from communication with the atmosphere during heat sterilization, 'first interior wall means connected to said exterior walls means and defining an inner member which extends inwardly from said end wall into and axially along the interior bore of the



tubing and which has an outer diameter generally equal to the interior diameter of the tubing bore for supporting the interior portion of the tubing at its normal diameter during heat sterilization, and

second interior wall means connected to said exterior wall means and extending from said end wall outwardly radially spaced from said first interior wall means and having an interior diameter less than the exterior diameter of the tubing for compressing the exterior portion of the tubing radially inwardly toward said first interior wall means during heat sterilization.

4,379,473

LONGITUDINALLY DIVIDED CABLE SLEEVE OF A SHRINKABLE MATERIAL

Dieter Kunze, Neuried, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 20, 1981, Ser. No. 236,526

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1980, 3009078

Int. Cl.³ F16L *11/12, 25/00, 55/16*

U.S. Cl. 138—167 **15 Claims**

1. In a longitudinally divided cable sleeve having a strip-like sleeve member composed of a heat shrinkable material having a sealing system along its edge composed of a longitudinal extending bead on each edge and a sealing bar engaging the beads in a sealed manner, the improvements comprising each of the beads having a non-shrinkable longitudinally extending strengthening element embedded therein, and the sealing bar having a pair of side elements interconnected by a central web, said side elements projecting from the central web to form an undercut groove on each side of said web so that the sealing bar has a cross-sectional configuration of a pair of C-shaped profiles facing in opposite directions and each groove receives one bead of the sleeve member to close said cable sleeve.

4,379,474

HEDDLE FRAME ACTUATING MECHANISM LOCATED BETWEEN A DOBBY AND THE HEDDLE FRAMES OF A WEAVING MACHINE

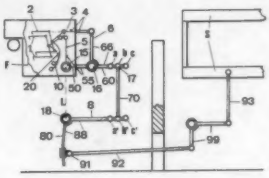
Otto Mueller, Uetikon am See, Switzerland, assignor to Staeubli Ltd., Horgen-Zuerich, Switzerland

Filed Oct. 16, 1980, Ser. No. 197,726

Claims priority, application Switzerland, Oct. 19, 1979, 9401/79

Int. Cl.³ D03D *39/16*

U.S. Cl. 139—21 **5 Claims**



1. A heddle frame actuating mechanism for operatively coupling a weaving machine having a movably supported heddle frame and a shed-forming machine having two lifting units, comprising a first lever supported for pivotal movement about a stationary first axis, means for drivingly coupling one of said lifting units to said first lever, a second lever supported on said first lever for pivotal movement about a second axis spaced from and substantially parallel to said first axis, means for drivingly coupling the other of said lifting units to said second lever, a third lever supported for pivotal movement about a stationary third axis spaced from and substantially parallel to said first and second axes, means for drivingly coupling said third lever to said heddle frame, a connecting member having first and second ends, the distance between said first and second ends being substantially equal to the distance between said first and third axes, means for pivotally supporting said first and second ends of said connecting member on said second lever and said third lever, respectively, at selected locations thereon so that said first and second ends of said connecting member are respectively spaced from said second and third axes and so that, when said second lever is in a predetermined position relative to said first lever, the distance between said first axis and said first end of said connecting member is substantially equal to the distance between said third axis and said second end of said connecting member.

4,379,475

WEDGING APPARATUS USEFUL FOR LOG SPLITTING

Ronald W. Nokes, 8150 LaPlace Ct., Westminster, Colo. 80030

Continuation-in-part of Ser. No. 823,490, Aug. 10, 1977, Pat. No. 4,254,808. This application Mar. 6, 1981, Ser. No. 241,075

The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.

Int. Cl.³ B27L *7/00*

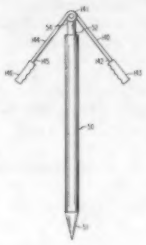
U.S. Cl. 144—193 C **12 Claims**

6. Manually operated apparatus for performing wedging type operations on a severable material as in log splitting and the like, comprising:

first and second elongated members positioned in concentric, coaxially slidable relation to each other, the first of said elongated members having a base and a tapered wedge body extending from said base to a tip and a first impact surface adapted to receive impact force components directed parallel to the longitudinal axis of said tapered wedge body, and the second of said elongated members being adapted to be driven manually by a person in coaxial, longitudinal relation to the first elongated member and having a second impact surface in axial alignment with the first impact surface on the first elongated member and adapted to impact on and to transfer forces

from the inertial momentum of said second elongated member to the said first impact surface on said first elongated member when said second elongated member is moved coaxially in relation to said first elongated member,

a pair of semi-flexible, springy handle bars, each of which is affixed to and extends radially outwardly from respectively opposite sides of said second elongated member and is adapted to effectively transmit driving force compo-



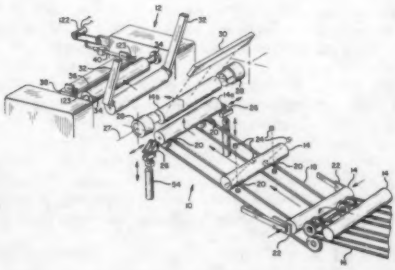
nents parallel to the longitudinal axis of said tapered body exerted on the distal end thereof by a person's hand to move said second impact member on said second elongated member toward and into contact with said first impact surface on said first elongated member while also being adapted to dampen the shock created by said first and second impact surfaces striking each other and transmitted by said second elongated body member to the persons hand.

4,379,476

VENEER LATHE LOG CHARGER SYSTEM HAVING ENHANCED ACCURACY AND RATE OF PRODUCTION

Larry R. Berry, Roseburg, Oreg., assignor to Sun Studs, Inc., Roseburg, Oreg.

Filed May 28, 1981, Ser. No. 267,898
Int. Cl.³ B27B *1/00;* **B27L** *5/02*
U.S. Cl. 144—357 **7 Claims**



1. A charger for a veneer lathe comprising:

(a) respective log engagement means for engaging opposing ends of an elongate log by extension of said log engagement means toward said opposing ends;

(b) actuating means for causing said log engage-means to move said log;

(c) position sensing means connected to said log engagement means for sensing the distance between said log engagement means as said log engagement means extend toward said opposing ends of said log;

(d) length measuring means for measuring the length of said log prior to engagement of said log by said log engagement means; and

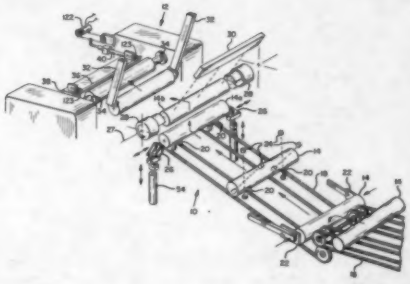
(e) means controlling the operation of said actuating means and connected to said position sensing means and said length measuring means respectively for comparing the length of said log as measured by said length measuring means with the distance between said log engagement means as sensed by said position sensing means and initiating operation of said actuating means in response to said length and distance respectively being substantially equal.

4,379,477

VENEER LATHE LOG CHARGER SYSTEM HAVING ENHANCED ACCURACY AND RATE OF PRODUCTION

Kenneth L. Shrum, Glide, Oreg., assignor to Sun Studs, Inc., Roseburg, Oreg.

Filed May 28, 1981, Ser. No. 268,103
Int. Cl.³ B27L *5/02*
U.S. Cl. 144—357 **13 Claims**



1. A charger for a veneer lathe comprising:

(a) rotary means for engaging opposing ends of an elongate log and rotating said log longitudinally about an axis of rotation, said rotary means including log engagement means for engaging each of said opposing ends of said log only within a portion of a circular area surrounding said axis of rotation so as to thereby leave a second circular area on each of said ends, concentric with and smaller than the first circular area, free of engagement by said rotary means;

(b) scanning means for sensing the shape of said log while it is rotated by said rotary means for determining the location of the longitudinal axis of the log for optimum production of veneer;

(c) means for disengaging said rotary means from said opposing ends of said log;

(d) means for transferring said log from said rotary means to a position wherein said longitudinal axis of said log is aligned with the rotational axis of said veneer lathe;

(e) rotary spindle means on said veneer lathe for engaging each of said opposing ends of said log;

(f) said second circular area being sufficiently large to enable said rotary spindle means to engage each of said ends of said log within said second circular area.

4,379,478

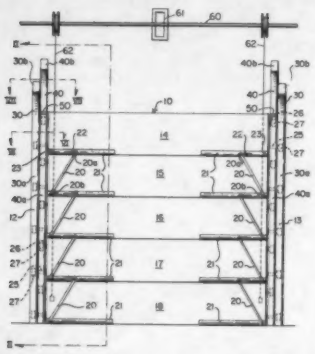
FOLDING OVERHEAD DOORS

Dale Lichy, 4651 Sylvan Dr., Allison Park, Pa. 15101

Filed Jun. 9, 1980, Ser. No. 157,951
Int. Cl.³ E06B *3/00*
U.S. Cl. 160—35 **8 Claims**

1. A folding overhead door assembly comprising opposite side support and guide means defining a door opening between them, said guide means including a pair of side-by-side channel members extending the height of the door opening on each side thereof and thereafter horizontally one spaced above the other, passage means between said two channels over their side-by-side length, a door component comprising a plurality of upstanding elongate, normally coplanar vertically stacked door

sections normally closing said opening, means pivotally attaching adjacent door sections together along successive like horizontal edges, follower means at the top and bottom of each end of each door section, one at the top engaged in said one of said pair of channels extending horizontally above the other and the other in the other of said channels, said follower means being operable to guide door sections between the normally coplanar vertical position in the side-by-side channels and an overhead side-by-side vertical position in the one above the other chan-



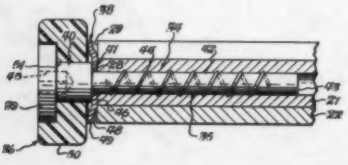
nel portions, each door section all the while remaining in a substantially vertical position, wherein the means pivotally attaching the door sections together is a lever arm extending from a lever arm guide fixed to the bottom of one door section to a guide fixed to the bottom of the next adjacent door section said lever arm being pivoted at its ends in the lever arm guides of two adjacent door sections for rotation between a vertical plane parallel to the plane of the door sections to a position generally parallel to the bottom edges of two adjacent sections connected thereby in the vertical side-by-side position.

4,379,479

ROLLER ASSEMBLY

Lauren C. Whiting, Clarence, N.Y., assignor to Whiting Roll-Up Door Mfg. Corp., Akron, N.Y.

Filed Jun. 1, 1982, Ser. No. 384,026
Int. Cl.³ E06B *3/38*
U.S. Cl. 160—201 **3 Claims**



1. In an upwardly-acting door structure arranged in a body opening, said door structure including a track mounted on said body and including at least two vertically-adjacent door panels, one of said panels having its lower marginal end portion configured as an elongated hinge section, another of said panels having its upper marginal end portion configured as a cooperative elongated hinge section, said hinge sections being slidably interfitted together in such manner as to permit one panel to shift relative to the other along the axis of elongation of said hinge sections while coupling said panels together for relative pivotal movement along the path of said track, the improvement which comprises: a roller assembly for guiding movement of said panels along said track and for reducing the ease with which said panels may shift laterally relative to one another, said roller assembly including

a shaft having an exteriorly-threaded shank portion matingly received in one of said hinge sections, and having a hub portion arranged without said one hinge section, said hub portion providing a shoulder surface arranged without said one hinge section in spaced facing relation thereto;

a roller rotatably mounted on said hub and arranged in said track; and

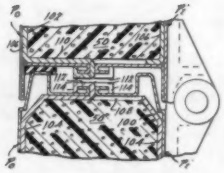
a stop member having one portion normally sandwiched between said one hinge section and said shoulder surface, and having another portion arranged proximate said roller member in spaced relation thereto.

4,379,480

ENERGY EFFICIENT GARAGE DOOR CONSTRUCTION AND THE LIKE

John J. Kempel, and Ronald F. Otto, both of West Branch, Mich., assignors to Garland Manufacturing Company, Detroit, Mich.

Filed Jul. 14, 1980, Ser. No. 168,537
Int. Cl.³ E06B *3/12, 9/00*
U.S. Cl. 160—232 **1 Claim**



1. An energy efficient laminated building structure for a sectional-type door having a plurality of said structures, and hinges movably connecting adjacent structures and permitting rocking movement therebetween, comprising:

first and second spaced, elongated metal panel members of identical cross-sections shape, each panel member having a main surface and first and second side edges;

said first side edges of said panel members being formed to provide a recessed area and said second side edges of said panel members being formed to provide a tongue area, said tongue area being insertable in said recessed area of an adjacent structure to create a baffle effect for inhibiting the passage of air therebetween, while also providing a clearance between said tongue and recess areas sufficient to permit limited relative movement between adjacent structures;

each of said first side edges including a return bend portion adjacent said main surface, an inwardly projecting portion extending from said return bend portion and a reverse bend portion extending from said inwardly projecting portion;

each of said second side edges including an inwardly offset and inclined portion adjacent said main surface, a U-shaped portion extending from said inwardly offset and inclined portion, an inwardly projecting portion extending from said U-shaped portion and a reverse bend portion extending from said inwardly projecting portion

a unitary expanded core fabricated of a heat insulating media interiorly disposed between and adhesively bonded to said panel members the reverse bend portions on the first side edges being spaced from each other, and the reverse bend portions on the second side edges being spaced from each other and together with said expanded core the said spaced reverse bend portions acting to prevent direct contact between the first and second panel members,

a generally U-shaped end member secured to the interior edges of said panel members at each end thereof;

retainer means operatively associated with said reverse bend

portion of said first and second side edges for securing said first and second panel members together along said first and second side edges; and

reinforcement means of generally C-shaped cross-section, nestingly received and secured interiorly of said panel members along said first and second side edges, for reinforcing said panel members at said hinges

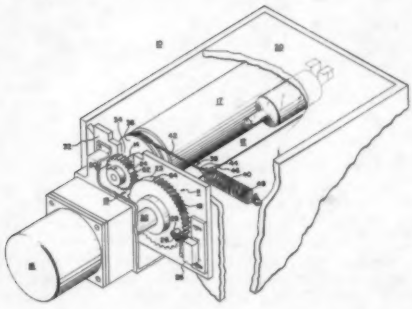
said retainer means being characterized by a plurality of alternately facing generally L-shaped deformable fingers formed in said reinforcement means for confining said reverse bend portions of said first and second side edges.

4,379,481

X-RAY APPARATUS AND CLOSURE MECHANISM THEREFOR

Adolph Juner, City Island; David J. Haas, Suffern, both of N.Y., and Chester D. Rudd, Westwood, N.J., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 864,504, Dec. 27, 1977, abandoned.
This application Nov. 10, 1980, Ser. No. 205,553
Int. Cl.³ G01N *23/00*; G21F *7/00*; A47G *5/02*
U.S. Cl. 160—310 **14 Claims**



1. An apparatus for inspecting various articles comprising

a chamber defining structure including enclosing walls and a retractable door, said structure being substantially impermeable to X-rays,

a shaft member inside said structure and provided for carrying said retractable door, said retractable door including a flexible construction windable on said shaft member, wherein winding said flexible construction onto said shaft member opens said chamber and unwinding said flexible construction from said shaft member closes said chamber,

motor means for driving said shaft member in rotation,

a gear train mechanically linking said motor means and said shaft member, said gear train including a drive gear driven by said motor means and having gear teeth only about a portion of its circumference, and a driven gear connected to said shaft member and having gear teeth only about a portion of its circumference,

said driven gear being moved independently of said drive gear upon closing said chamber, and said drive gear engaging said driven gear upon opening said chamber, and

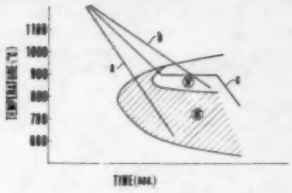
switch means actuated by said drive gear for controlling said motor means.

4,379,482

PREVENTION OF CRACKING OF CONTINUOUSLY CAST STEEL SLABS CONTAINING BORON

Hiroo Suzuki, Yokohama; Koichi Yamamoto, Kawasaki; Yasuhide Ohno, and Kou Miyamura, both of Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 2, 1980, Ser. No. 212,335
Claims priority, application Japan, Dec. 6, 1979, 54-157457
Int. Cl.³ B22D *11/16*
U.S. Cl. 164—485 **5 Claims**



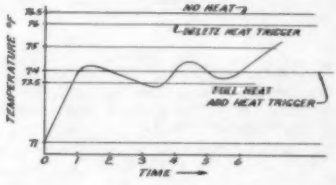
1. A method for preventing crackings of boron-containing steel slabs in continuous casting of molten steels containing nitrogen and boron in amounts falling within Zone II defined in FIG. 2, which comprises cooling the steels through a range of from the melting point to 900° C. with an average cooling rate ranging from 0.01° to 1° C./sec. to prevent precipitation of boron-containing compounds along austenite grain boundaries thereby promoting precipitation of the boron-containing compounds in the austenite grains.

4,379,483

METHOD OF CONTROLLING HEATING AND COOLING SOURCES

Scott R. Farley, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Aug. 17, 1981, Ser. No. 293,185
Int. Cl.³ F25B *29/00*, *7/00*
U.S. Cl. 165—2 **7 Claims**



1. A method of controlling a plurality of heating sources comprising the steps of:

(a) selecting a set temperature at which it is desired to maintain the indoor temperature;

(b) selecting an on temperature at which all heating sources will be turned on;

(c) selecting an add heat temperature;

(d) selecting an off temperature at which all heating sources which are not in a locked-on mode will be turned off;

(e) turning all heat sources on when the indoor temperature is below the on temperature;

(f) turning all heat sources off except a heat source which is in a proportional control mode and any heat source which is in a locked-on mode as the indoor temperature rises past the off temperature;

(g) transferring one of the heat sources from an off mode to a proportional control mode if the indoor temperature falls past the add heat temperature;

(h) proportionally controlling the heat source which is in the proportional control mode in order to try to maintain the indoor temperature adjacent the set temperature; and

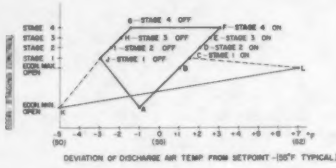
(i) transferring the heat source which is in the proportional control mode to a locked-on mode in which the heat source is turned on and transferring another heat source from an off mode to the proportional control mode each time the indoor temperature falls past the add heat temperature until all heat sources are on the locked-on mode.

4,379,484

CONTROL FOR A VARIABLE AIR VOLUME TEMPERATURE CONDITIONING SYSTEM-OUTDOOR AIR ECONOMIZER

Duane L. Lom, and John F. Klouda, both of La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Jan. 12, 1981, Ser. No. 224,709
Int. Cl.³ F25B *29/00*; F24F *7/00*
U.S. Cl. 165—16 **10 Claims**



1. A control for a temperature conditioning system which includes an outdoor air economizer comprising

a. an outdoor ambient air temperature sensor;

b. a discharge air temperature sensor; and

c. means for selectively modulating the economizer in one of two modes, the first mode being in response to temperature conditioning demand and the second mode being in response to the discharge air temperature, said one mode being selected as a function of the temperature conditioning demand and the outdoor ambient temperature, wherein the temperature conditioning demand is determined by the deviation of the discharge air temperature from a setpoint.

4,379,485

WET/DRY STEAM CONDENSER

Warren H. Fisher, Jr., Parsippany, and Barry M. Barnet, Morris Plains, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Apr. 9, 1981, Ser. No. 252,546
Int. Cl.³ F28B *1/02, 1/06*
U.S. Cl. 165—110 **16 Claims**

1. A wet/dry steam condensing apparatus comprising:

a steam receiving plenum adapted to receive steam from a steam source;

a plurality of substantially vertically aligned, heat pipes, each of said heat pipes having an evaporator section extending in said plenum and adapted to receive heat energy from said steam, and a condensing section extending out of said plenum, each of said pipes containing a quantity of a heat transfer fluid adapted to transfer said heat energy from its evaporator section to its condensing section through a vapor/condensation cycle;

a separation baffle mounted on the condensing section of said heat pipes and dividing each section into two portions;

a plurality of fins disposed on a portion of the condensing section of each of said pipes; and

cooling water application means operatively associated with the remaining portion of the condensing section of each of said pipes and adapted to selectively direct cooling water thereto.

2. A wet/dry steam condensing apparatus comprising:

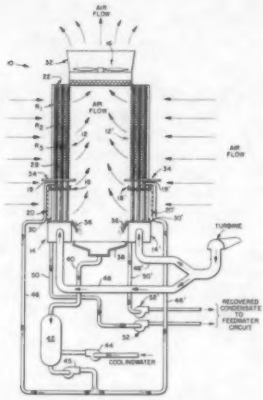
a steam receiving plenum adapted to receive steam from a steam source;

a plurality of substantially vertically aligned, heat pipes, each of said heat pipes having an evaporator section extending in said plenum and adapted to receive heat energy from said steam, and a condensing section extending out of said plenum, each of said pipes containing a quantity of a heat transfer fluid adapted to transfer said heat energy from its evaporator section to its condensing section through a vapor/condensation cycle;

a plurality of fins disposed on a portion of the condensing section of each of said heat pipes;

a plurality of spray heads adapted to direct a spray of cooling water onto the remaining heat pipe portions; and

a flood water trough located on said remaining heat pipe portions and adapted to receive cooling water and flow the water downwardly onto said remaining heat pipe portions of said heat pipes.



3. A wet/dry steam condensing apparatus comprising:

a steam receiving plenum adapted to receive steam from a steam source;

a plurality of substantially vertically aligned, heat pipes, each of said heat pipes having an evaporator section extending in said plenum and adapted to receive heat energy from said steam, and a condensing section extending out of said plenum, each of said pipes containing a quantity of a heat transfer fluid adapted to transfer fluid adapted to transfer said heat energy from its evaporator section to its condensing section through a vapor/condensation cycle;

each condensing section having an upper finned portion and a lower unfinned portion; and

cooling water application means operatively associated with the lower unfinned portion of the condensing section of each of said pipes and adapted to selectively direct cooling water thereto.

4,379,486

HEAT EXCHANGER

Tetsuo Kurihara, Utsunomiya, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1980, Ser. No. 173,223
Claims priority, application Japan, Aug. 3, 1979, 54-99191
Int. Cl.³ F28F *3/00*
U.S. Cl. 165—153 **12 Claims**

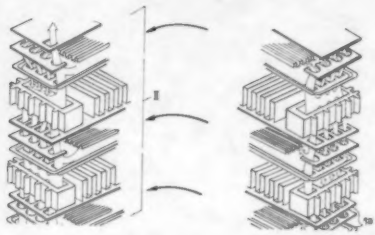
1. In a heat exchanger having a plurality of layered tube units for refrigerant in a gas phase and a liquid phase, the tube units being disposed substantially one above the other, each of the tube units comprising at least one tube made of two elongated plates and having a refrigerant inlet side and a refrigerant outlet side at opposite elongated ends, and spacer blocks dis-

posed between said tubes of said tube units forming air passages between said tubes of said tube units, said air passages having an air inlet side and an air outlet side, adjacent upper and lower of the tube units being alternately arranged in relation to respective said refrigerant inlet and outlet sides, said spacer blocks defining refrigerant flow passages between said tubes of each said tube units and respectively between alternately arranged respective and said refrigerant inlet and outlet sides of said adjacent upper and lower of the tube units, the improvement wherein

each of said at least one tube of a common of said tube units has said refrigerant inlet and outlet sides on common sides respectively and constitutes means for the refrigerant to flow therethrough in the same direction defining a single refrigerant tubular passage in said common tube unit,

a single refrigerant inlet opening formed in a lower most of said plates in each of said tube units at said refrigerant inlet side and adjacent said air inlet side,

at least one refrigerant outlet opening formed in an uppermost of said plates of said tube units, respectively, at the refrigerant outlet side of each said tube units,



an elongated inside fin disposed in each said tube dividing said tube cross-sectionally in width into a plurality of elongated separated channels for guiding refrigerant flow from said refrigerant inlet side to the refrigerant outlet side, and

said inside fin in the lowermost of said tubes is spaced from sad inlet opening and said refrigerant inlet side leaving a free space between said refrigerant inlet opening and said refrigerant inlet side, respectively, and said inside fin,

at least one of said spacer blocks is formed with only one of said refrigerant flow passages extending substantially from said air inlet side to said air outlet side constituting means for spreading out and mixing the refrigerant flowing upwardly therethrough and for passing downwardly flowing portions of the refrigerant at said air outlet side, such that there is a refrigerant distribution with most of the refrigerant flowing in the tubes adjacent said air inlet side, with the gas phase primarily at said air outlet side and the liquid phase primarily at said air inlet side, and said inside fins maintaining said distribution in said tubes.

4,379,487

INTERMESHING PASSAGE MANIFOLD

Kalman Krakow, 102 Radcliffe Rd., Montreal West, Quebec, Canada (H4X 1C2)

Filed Apr. 10, 1981, Ser. No. 252,930
Int. Cl.³ F28F 9/02
U.S. Cl. 165—165 **7 Claims**

1. An intermeshing passage manifold adapted for connecting ducts each conveying different fluids to the ends of a heat exchanger core comprising;

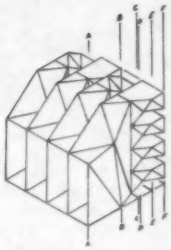
(a) one primary and an integral number of secondary manifold sections adjacent successively in an end-to-end manner

(b) each of said manifold sections comprising a plurality of passage modules adjacent in a side-by-side manner

(c) each of said passage modules including a pair of similar twisted passages enveloped by four module side partitions to maintain the shape of the cross-sections of the module similar along the length thereof

(d) said twisted passages in each of said modules being separated by a flowguide partition; each of said flowguide partitions comprising a continuous surface bound by six adjoining lines, one of each of said lines being contained within each of the four module side partitions and each of the two end planes of said module, each of said flowguide partitions serving to transform the cross-sectional configuration of said pair of twisted passages so that the orientation of said cross-sectional configuration of said twisted passages at one end of said module end planes is substantially at right angles to the orientation of said cross-sectional configuration of said twisted passages at the other of said module end planes

(e) said primary manifold section having one layer of passage



modules oriented so that when said two ducts are connected to it at one end, the two passages defined by said ducts are subdivided into separate adjacent intermeshed passages at the other end

(f) each of said secondary manifold sections having a plurality of layers of passage modules adjacent in a side-by-side manner

(g) each of said secondary manifold sections contains a larger number of passage modules than the preceding manifold section such that an integral number of passage modules of each of the secondary manifold sections is aligned and congruent with each of the passage modules of the preceding manifold section

(h) said passage modules being oriented so that the passages at the end of the manifold which is opposite to that end to which the said ducts are connected are separate adjacent intermeshed passages.

4,379,488

LATCH FOR WELL TOOL

Eddie J. Hamm, Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Feb. 2, 1981, Ser. No. 230,879
Int. Cl.³ E21B 23/02
U.S. Cl. 166—217 **14 Claims**

1. A device for releasably locking a well tool in a flow conductor which includes a receptacle having a locking recess therein, comprising:

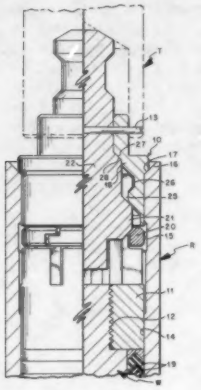
(a) body means including:

(1) an upper body member; and

(2) a lower body member having means on its lower end for attaching a well tool thereto;

(b) means on said upper and lower body members coengageable for connecting them together preventing substantial longitudinal movement therebetween;

(c) holding means mounted in said body means maintaining co-engagement of said co-engageable means;
(d) latch means on said body means expandable into engagement with said locking recess; and
(e) expander means slidably mounted in said body means



for expanding said latch means into locking engagement with said locking recess on longitudinal movement of said expander means to a lower position, said expander means being movable to an upper position to allow said latch means to disengage said locking recess, and means on said expander means engageable by an operating tool.

4,379,489

METHOD FOR PRODUCTION OF HEAVY OIL FROM TAR SANDS

Louis D. Rollmann, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,355
Int. Cl.³ E21B *43/22, 43/24, 43/40*
U.S. Cl. 166—266 **6 Claims**

1. In the production of heavy oil from a subterranean reservoir penetrated by spaced injection and recovery systems, the method comprising:
(a) introducing into said injection system adjacent to said reservoir liquid sulfur and oxygen-containing gas, thereby obtaining a mixture of sulfur and oxygen-containing gas,
(b) igniting said mixture to produce sulfur dioxide,
(c) maintaining the pressure of said oxygen-containing gas sufficient to keep said sulfur dioxide in the liquid state, at the temperature of the reservoir.
(d) flowing liquid sulfur dioxide into said reservoir, whereby there is formed a solution of heavy oil in the reservoir in said liquid sulfur dioxide,
(e) flowing said solution toward said production system, and
(f) recovering said solution from said production system.

4,379,490

METHOD FOR REMOVAL OF ASPHALTENE DEPOSITIONS WITH AMINE-ACTIVATED DISULFIDE OIL

Shelby P. Sharp, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 22, 1981, Ser. No. 256,430
Int. Cl.³ E21B *43/25*
U.S. Cl. 166—304 **15 Claims**

1. A method for treating an asphaltene deposit comprising contacting the asphaltene deposit with an amine-activated dialkyl disulfide oil.

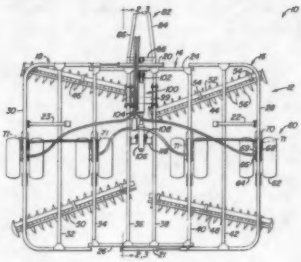
12. A method for treating asphaltene deposits in an oil-bearing formation comprising:
(a) injecting an amine-activated dialkyl disulfide oil into a well penetrating said formation;
(b) displacing said amine-activated dialkyl disulfide oil into said formation;
(c) shutting said well in for a time period; and
(d) returning said well to production.

4,379,491

LEVELING SYSTEM FOR A WHEELED IMPLEMENT

Paul R. Riewerts, Port Byron, Ill., and Stephen M. Hillman, Mesa, Ariz., assignors to Deere & Company, Moline, Ill.

Filed Mar. 23, 1981, Ser. No. 246,758
Int. Cl.³ A01B *59/042*
U.S. Cl. 172—328 **17 Claims**

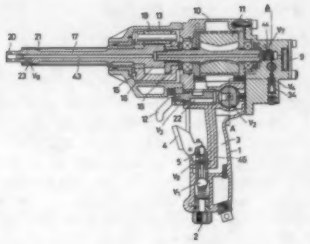


1. A wheeled implement including a leveling system, said implement having a frame adapted to support ground-engaging tools, a hitch structure pivotally connected to said frame for movement about a transverse axis and extending forwardly to a forward end connectible to a traction vehicle, and support wheels mounted on said frame and movable between transport and working positions, said leveling system comprising:
(a) power means for raising and lowering said support wheels, said power means including at least two wheel lift cylinders connected to parallel;
(b) fore-and-aft leveling means for stabilizing said frame during transport and for maintaining said frame substantially parallel to the ground during both transport and working positions, said fore-and-aft leveling means including a first support arm pivotally attached at one end to a front portion of said frame, a second support arm securely attached to a point on said frame rearward of said first support arm, a hydraulic cylinder attached to said first support arm and being coaxially aligned with a spring assembly which is attached to said second support arm, said hydraulic cylinder being connected in parallel with said wheel lift cylinders to retain said frame substantially parallel to the ground during movement of said frame between said transport and working positions and to hold said frame stable during transport, and said spring assembly cooperating with said hydraulic cylinder to permit flexible movement of said frame while said implement traverses over uneven ground;
(c) a mechanical link connected between said first support arm and said hitch structure for angularly retaining said hitch structure relative to said front portion of said frame to accommodate a drawbar hitch which can be positioned at various heights on said traction vehicle;
(d) fluid supply means for supplying pressurized fluid to said wheel lift cylinders and to said fore-and-aft hydraulic leveling cylinder; and
(e) flow dividing means for dividing the volume of said pressurized fluid equally between said wheel lift cylinders and said fore-and-aft hydraulic leveling cylinder such that said frame can be raised and lowered with respect to the ground in a substantially horizontal fashion.

4,379,492
TORQUE CONTROL APPARATUS FOR PNEUMATIC IMPACT WRENCH

Masaaki Hiraoka, Yao, Japan, assignor to Nippon Pneumatic Manufacturing Co., Ltd., Osaka, Japan

Filed Jun. 2, 1980, Ser. No. 155,084
Claims priority, application Japan, Jun. 4, 1979, 54-71687
Int. Cl.³ B25B *23/145*
U.S. Cl. 173—12 3 Claims



1. A pneumatic impact apparatus connected to a compressed air source, said apparatus comprising: a rotary air motor and means defining a first air passage connecting said air source and said motor;

a torsion bar having a first and a second end and connected at said first end to said motor for rotation therewith, said torsion bar having an exhaust passage directed through the side thereof at one of said first and second ends;

a spindle case having third and fourth ends surrounding said torsion bar and held at said third end to said torsion bar only at the other of said first and second ends for movement therewith, said fourth end of said spindle case being free for rotation with said other of said first and second ends of said torsion bar when a torque is applied to said first end of said torsion bar resisted by an external force at said second end, said spindle case having an exhaust passage opening to the atmosphere normally aligned with said exhaust passage of said torsion bar for allowing air to pass therethrough when said fourth end of said spindle case is rotating relative to said one of said first and second ends of said torsion bar out of alignment with said torsion bar;

a two-position main valve, located in said first air passage, for controlling the air flowing to said motor from the air source, said main valve including first and second diaphrams responsive to air pressure applied thereto, for respectively opening and closing said main valve to respectively allow and block the flow of air to said motor;

fluid control means, having a first inlet, first and second outlets and first and second control orifices, responsive to air pressure applied to said first and second control orifices for switching the flow of air entering said first inlet to said first and second outlets, respectively; said fluid control means having first and second pilot passages, said first and second outlets respectively communicating with said first and second diaphrams through said first and second pilot passages, respectively;

throttling valve means, having a second inlet, a third outlet communicating with said exhaust passage of said torsion bar, and a fourth outlet communicating with said second control orifice of said fluid control means, for controlling the flow of air from said second inlet to said exhaust passage of said torsion bar and for reducing the air pressure at said second control orifice to less than the air pressure at said second inlet;

control valve means, located in said first passage between said air source and said motor, for controlling air flow from the air source to said second inlet of said throttling means, said first inlet of said fluid control means, said first control orifice of said fluid control means and said motor, said control valve means having a third inlet in said first passage for communicating with the air source, a fifth outlet for communicating with said motor when said main valve is open, and a sixth outlet communicating with said first control orifice of said fluid control means, said control valve means being continuously moveable between first, second and third successively adjacent positions, said control valve means blocking communication between said third inlet and said fifth and sixth outlets in said first position, said fifth and sixth outlets communicating with said third inlet and with each other when said control valve means is in said second position, said third inlet communicating with said fifth outlet and said control valve means blocking communication between said fifth and sixth outlets and said third inlet, when said control valve means is in said third position said fifth outlet communicating with said second inlet of said throttling means and said first inlet of said fluid control means;

whereby when said control valve means is moved from said first to said second position, air pressure is applied through said control valve means to said first inlet and said first orifice of said fluid control means to direct air from said first inlet through said first outlet to apply pressure to said first diaphram to open said main valve so as to allow airflow to said air motor to drive said motor to apply torque to said torsion bar and said spindle case;

whereby when said control valve means is moved from said second position to said third position, air pressure to said first orifice of said fluid control means is cut off, airflow is directed through said throttling valve means to said torsion bar and through said exhaust passage, the air pressure at said second control orifice of said fluid control means being at a reduced value insufficient to switch the flow of air entering said first inlet of said fluid control means to said second outlet thereof so that air pressure on said first diaphram is maintained and said motor continues to be driven; and

whereby if rotation of said torsion bar is blocked by an external force while said control valve means is in said third position, said fourth end of said spindle case is rotated relative to said one of said first and second ends of said torsion bar, whereby said exhaust passage of said spindle case is instantaneously closed so that airflow through said third outlet of said throttling valve means is interrupted so that air pressure at said second control orifice of said fluid control means is increased to switch the flow of air entering said first inlet of said fluid control means to said second outlet thereof, so that pressure to said second diaphram is applied to close said main valve to shut off said motor; return of said torsion bar to its normal position relative to said spindle case then opening said exhaust valve resulting in said main valve again opening to allow said motor to be driven by airflow from the air source.

4,379,493
METHOD AND APPARATUS FOR PREVENTING WIRELINE KINKING IN A DIRECTIONAL DRILLING SYSTEM

Gene Thibodeaux, 7036 Linden Cir., Anchorage, Ak. 99502

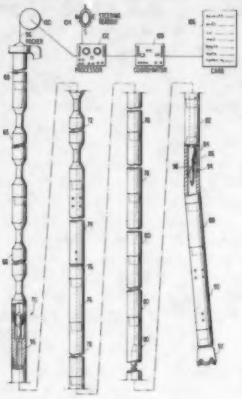
Filed May 22, 1981, Ser. No. 266,387
Int. Cl.³ E21B *7/04, 7/12, 47/024, 47/12*
U.S. Cl. 175—61 45 Claims

1. In a wireline directional drilling system including a drill string having a bit and downhole motor for rotating the bit, a bent angle sub and a jar and a wireline directional tool mounted within the drill string adjacent the bent angle sub with a wireline extending from the directional tool upward to a surface location wherein the improvement comprises:

a landing sub coaxially mounted within the drill string above the jar and having at least one longitudinal passage therethrough for permitting drilling fluid to pass within the

drill string, through said landing sub and through the downhole motor and bit; and

stop means connected to the wireline for engaging said landing sub and supporting the wireline between said landing sub and the directional tool while concomitantly permitting drilling fluid to pass through said landing sub, said stop means being connected to the wireline in a position to permit a degree of slack in the wireline between the landing sub and the directional tool in excess of the maximum stroke of the jar but with sufficient tautness in the wireline between said landing sub and the directional tool to minimize coiling of the wireline adjacent the jar and reduce the tendency of the jar to kink the wireline during dynamic action thereof.

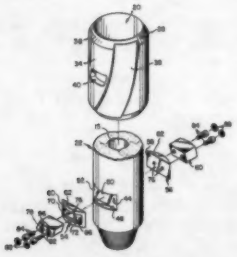


4,379,494

REPLACEABLE DRILL STABILIZER SLEEVE

Adel Sheshtawy, Norman, Okla., assignor to International Petroleum Engineering Corporation, Noble, Okla.

Filed Oct. 5, 1981, Ser. No. 308,490
Int. Cl.³ E21B *17/10*; E21C *9/00*
U.S. Cl. 175—325 **27 Claims**



1. An apparatus for stabilizing a drill string in a well bore comprising:

a drill string section for placement in the drill string and having at least one flat formed therein;

restricting means for insertion into the flat on said section to restrict movement parallel to the longitudinal axis of said section, said restricting means having a flat formed therein;

a cylindrical body having at least one well bore contact surface thereon with at least one slot formed through said body, said cylindrical body for mounting at a predetermined position on said section, the flat in said restricting means being aligned with said slot in the predetermined position;

block means for insertion through said slot and into the flat on said restricting means; and

fastening means for fastening said block means to said restricting means to secure said cylindrical body in the predetermined position.

26. A method for assembling a stabilizer for a drill string in a well bore comprising the steps of:

positioning cylindrical members in flats formed on diametrically opposed sides of a section in the drill string, the cylindrical members having an outer surface with a flat formed therein, the outer surface forming a continuation of the outer surface of the drill string section when positioned;

fitting a cylindrical body over the section of the drill string, the cylindrical body having a plurality of well bore contact surfaces formed thereon and aligning slots formed therethrough with the flats in said cylindrical members in the drill string section to place the cylindrical body in a predetermined position, the cylindrical body preventing removal of the cylindrical members from the drill string section when in the predetermined position;

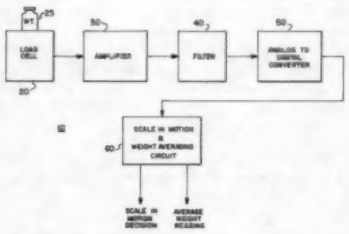
inserting locking blocks into each of the slots and into the aligned flats and securing the locking blocks to the cylinder members to secure the cylindrical body in the predetermined position.

4,379,495

WEIGHING SCALE WITH LOW SUSCEPTIBILITY TO VIBRATION

Michael H. Cocks, and Gary A. Evans, both of Dayton, Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Apr. 27, 1981, Ser. No. 258,212
Int. Cl.³ G01G *23/10*
U.S. Cl. 177—1 **8 Claims**



1. A method for determining a representative average weight reading based on a series of weight readings from a scale subject to vibrations comprising the steps of

generating signals at regular intervals representative of the weight readings from said scale, and

averaging the weight signals occurring during one complete vibrational cycle, or integral multiple thereof.

4,379,496

WEIGHT MEASURING BALANCE

Jean Godat, Olivet, and Jean Paget, Breuillet St. Yon, both of France, assignors to Fonderie & Ateliers des Sablons, France

Filed Mar. 10, 1981, Ser. No. 242,400
Claims priority, application France, Mar. 28, 1980, 80 06975
Int. Cl.³ G01D *19/22*
U.S. Cl. 177—25 **5 Claims**

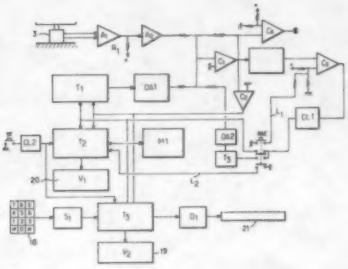
1. A weight measuring balance for proportioning a liquid product mixture from cumulative formulas in weight furnishing the weight of each of the products added, cumulative with the weight of the products previously added, including a pan

supported by a gauge which furnishes a signal representative of the weight of the load, comprising:

a. a first display for displaying the weight detected by said gauge, which is equal to the weight of the load of materials already on the pan;

b. a keyboard on which is entered the weight of a new cumulative weight of products to be on said pan, which is indicated in the cumulative formula, which weight corresponds to the sum of the quantity of products already loaded, plus the quantity of the new product to be loaded;

c. means for subtracting the weight of the products already loaded on said pan from the new cumulative weight of products to obtain only the weight of the new material or product to be loaded;



d. a second display for initially displaying the weight of the new material or product to be loaded as determined by said subtracting means;

e. means for displaying on said second display a decreasing value from the initially displayed value of said second display in terms of the quantity of products loaded on the pan, so that a return to zero of said second display indicates that a given quantity of product has been loaded; and

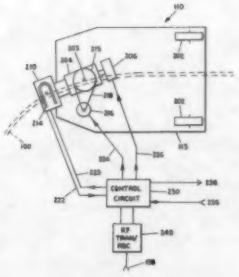
f. a signalling means for allowing a visual indication of the approach to zero of the weight of the quantity which should be loaded on said pan.

4,379,497

VEHICLE COLLISION AVOIDANCE SYSTEM

Thomas E. Hainsworth, Holland, and Robert W. Houskamp, Grand Rapids, both of Mich., assignors to Bell & Howell, Company, Chicago, Ill.

Filed Sep. 2, 1980, Ser. No. 183,241
Int. Cl.³ B62D *1/28*
U.S. Cl. 180—168 **17 Claims**



1. In an automatic guidance system having first and second self-propelled vehicles adapted to follow a predetermined guidepath having an intersecting portion defining a potential congestion zone on a floor surface, each of said vehicles having energizing means for driving the vehicle along said guidepath, the improvement which comprises:

marker means on said floor surface a spaced distance from said intersecting portion of said guidepath for indicating the proximity of said intersecting portion on said guidepath;

first sensing means on said first vehicle to detect said marker means and for generating a first proximity signal responsive thereto;

first transmitter means on said first vehicle and connected to said first sensing means for transmitting a polling signal responsive to said first proximity signal;

first receiver means on said first vehicle for detecting spatial communication signals generated by said second vehicle;

second sensing means on said second vehicle for detecting said marker means and generating a second proximity signal responsive thereto;

second receiver means on said second vehicle for receiving said polling signal;

second transmitter means on said second vehicle for transmitting a blocking signal in response to said polling signal when said second vehicle is within said potential congestion zone;

said first receiver means on said first vehicle is responsive to said blocking signal for generating a stop signal corresponding thereto; and

first control means on said first vehicle coupled to said first receiver means for disabling said energizing means of said first vehicle in response to said stop signal generated by said first receiver means until such time as said blocking signal is no longer received by said first receiver means, whereby said first vehicle will automatically stop when approaching said potential congestion zone as long as said second vehicle is passing therethrough.

4,379,498

SAFETY DEVICE FOR LADDERS

Richard H. Krusmark, 812 Pembroke Ave., Wabasha, Minn. 55981

Continuation-in-part of Ser. No. 129,118, Apr. 21, 1980, abandoned. This application Jun. 30, 1981, Ser. No. 278,988
Int. Cl.³ E06C *7/48*
U.S. Cl. 182—107 **21 Claims**

1. A safety device for a ladder having a pair of spaced side rails joined by spaced rungs, said safety device comprising:

(a) a holding member;

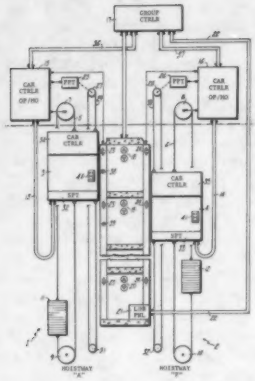
(b) means for rotatably fastening said holding member to the rung of the ladder, for rotational movement about a longitudinal axis of the rung; and

(c) means for gripping a cylindrical object, said gripping means connected to said holding member in a manner wherein said gripping means is disposed to lie generally perpendicular to the rung, whereby when the ladder is placed against a vertically positioned cylindrical object, said gripping means engage the cylindrical object along a length generally parallel to a longitudinal axis of the cylindrical object.

4,379,499
EMERGENCY POWER ELEVATOR RECOVERY AND SERVICE SYSTEM

Frederick H. Nowak, Southington, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Jul. 6, 1981, Ser. No. 280,843
Int. Cl.³ B66B 5/02
U.S. Cl. 187—29 R 10 Claims



1. An elevator system including a group controller means and a plurality of elevators operable either in response to normal electrical power provided by a feeder or in response to emergency electrical power in the absence of normal power at said feeder;

each elevator including a car movable between landings of a shaftway in a building, motion means for providing and arresting motion of the related car in its shaftway, and car controller means, for registering requests for service to said landings, for providing car control signals indicative of said requests for service and of conditions of said car, and for controlling said motion means and providing access between said car and said landings in response to said car control signals, for monitoring said feeder and for providing in response to loss of power at said feeder and to a signal indicative of said group controller selecting said elevator to run, signals to said motion means to cause said car to approach and provide access to said designated landing and either a first signal indicative of providing access to said designated landing or a second signal indicative of failure to provide access to said designated landing after a determined time period;

said group controller means comprising means for exchanging signals with each of said car controller means, for monitoring said feeder and providing, to said car controller means, in response to loss of normal power at said feeder, select signals indicative of successive ones of said elevators selected to run on emergency power to recover said elevators to a designated landing, the select signal for each elevator ending in response to receipt of either said first signal or said second signal from the related car controller means, for providing a phase two signal in response to receipt from each of said car controller means of either said first signal or said second signal, and for providing to at least one of said car controller means said select signal indicative of the related elevator being designated to run in response to said phase two signal; characterized by:

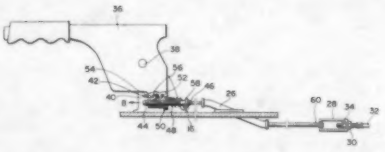
each of said car controller means comprising means for providing a third signal indicative of the related car not being at said designated landing, responsive to the absence of said select signal for rendering the related elevator inoperative, responsive to concurrence of said second signal and said phase two signal for a given time interval to cease providing said second signal, and responsive to the absence of said first signal concurrently with the presence of said select signal to cause said car to approach and provide access to said designated landing; and

said group controller means comprising means responsive to the absence of said second signal concurrently with the presence of said third signal from the same one of said car controller means and said phase two signal for providing a select signal to said one car controller means, whereby any car not recovered prior to provision of the phase two signal may be periodically selected to run in an attempt to recover the car to the designated landing after provision of the phase two signal.

4,379,500
PARKING BRAKE CABLE ADJUSTING DEVICE

Kyoichi Kamino, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 17, 1981, Ser. No. 244,345
Claims priority, application Japan, Mar. 25, 1980, 55-39778[U]
Int. Cl.³ F16D 65/54
U.S. Cl. 188—196 B 4 Claims



1. A parking brake cable adjusting device comprising:

a brake lever;

a control cable interconnecting said brake lever and a brake-operating mechanism;

a ratchet mechanism interconnecting a first end section of said control cable and said brake lever and permitting said control cable first end section to advance in one axial direction relative to said brake lever thereby taking up any slack in said control cable; and

biasing means for urging said control cable first end section in said one axial direction;

said ratchet mechanism including a series of ratchet teeth formed on said control cable first end section along the axis thereof and a pawl pivotally mounted on said brake lever in a position to engage said ratchet teeth;

said control cable having a flange mounted thereon at a location adjacent said control cable first end section, said biasing means including a tension spring whose ends are respectively attached to said brake lever and said control cable flange.

4,379,501
VENTILATED DISK BRAKE

Yutaka Hagiwara, Fujisawa; Toshiaki Takada, and Tetu Yamazaki, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

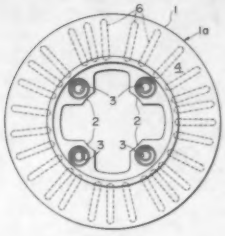
Filed Feb. 24, 1981, Ser. No. 237,620
Claims priority, application Japan, Feb. 27, 1980, 55-22811
Int. Cl.³ F16D 65/847
U.S. Cl. 188—218 XL 12 Claims

1. A ventilated disk brake comprising:

a pair of brake pads;

a rotor having a brake-pad engaging portion with a pair of brake-pad engaging walls arranged to be pressed between and by the pair of brake pads;

a plurality of cooling ribs extending radially between the pair of brake-pad engaging walls, the spacing and thick-



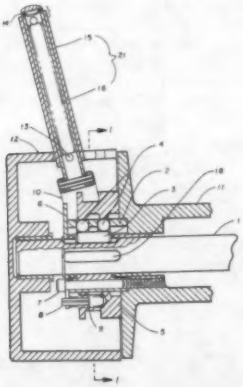
ness pattern of said ribs being randomized so that any identical spacing and thickness pattern is not repeated.

4,379,502

WINCH CLUTCH

Harold M. Ball, Broken Arrow, and Robert G. Beach, Tulsa, both of Okla., assignors to Ramsey Winch Company, Tulsa, Okla.

Filed Dec. 22, 1980, Ser. No. 218,349
Int. Cl.³ F16D *11/12*; B66D *1/00*
U.S. Cl. 192—71 **4 Claims**



1. In a winch, a clutch assembly comprising a housing, a power shaft having four slots spaced equidistantly on the surface of the said power shaft, a cylindrical clutch housing having a retainer plate mounted on one end of the said cylindrical clutch housing with at least one dowel pin and at least two steel balls located in said cylindrical clutch housing, the said cylindrical clutch housing being attached to a cable drum; a cylindrical clutch locking ring having a pair of grooves therein, being slidably mounted around the said cylindrical clutch housing, the said cylindrical clutch locking ring being actuated by a yoke pivotly mounted on the clutch housing; the said yoke being attached to a clutch handle.

4,379,503

GRAVITY ROLLERWAY CONVEYOR

Andrew T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

Continuation of Ser. No. 782,936, Mar. 30, 1977, abandoned. This application Sep. 6, 1978, Ser. No. 940,078
Int. Cl.³ B65G *13/00*
U.S. Cl. 193—37 **5 Claims**

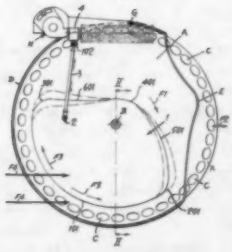
3. A roller, comprising: a substantially rigid hub having bearing means for rotating the roller about an axis; an outer annular tire at least partially extending radially outwardly from the remainder of the roller to provide a load engaging surface, with the annular tire having an outer peripheral surface and an inner peripheral surface; said hub supportingly engaging said annular tire inner peripheral surface; said annular tie, when supported on its hub, being of an elastomeric material having a relaxed tension that is uniform throughout its cross-section when removed from said hub and turned inside out; when said tire is removed from said hub in a relaxed state inside out with respect to its positioning on said hub, the inner diameter of said tire being substantially smaller than the outer diameter of said hub; each of said tires having a maximum peripheral tension at its outer peripheral surface uniformly changing along a radius to a maximum compression at its inner peripheral surface to constitute means to provide a rolling resistance at substantially zero speed that is substantially less than the rolling resistance it would exhibit if the annular tire was turned inside out from its mounted position and replaced on said hub.

4,379,504

ARTICLE FEEDING DEVICE

Sandro Salicini, Bologna, Italy, assignor to Carle & Montanari S.p.A., Bologna, Italy

Filed Dec. 15, 1980, Ser. No. 216,711
Claims priority, application Italy, Dec. 21, 1979, 15339/79[U]
Int. Cl.³ B65G *47/12*
U.S. Cl. 198—455 **8 Claims**



1. A device for feeding articles in orderly succession for further processing, comprising

(a) a horizontally disposed, circular disc having a crown of recesses spaced along its circumference for receiving said articles;

(b) means for rotating said disc;

(c) the surface of said disc being subdivided into

(i) a larger receiving portion acting as a feed reservoir completely enclosed by a fixedcircumferential side wall extending along the periphery of said disc, and a fixed partition wall extending across the interior of said disc; and

(ii) a smaller delivery portion located outside of said feed reservoir;

(d) a distributor dish of generally conical shape which covers a portion of said receiving portion and has an arcuate circumferential portion adjacent to the inner periphery of said crown of recesses, said distributor dish presenting, in top plan view, the approximate shape of a sector with rounded corners, the arc of said sector being concentric with the rotation axis of said disc and extending close to the inner periphery of said crown of recesses, and the radial edge of said sector located upstream in the direction of rotation of said disc being curved in a convex manner, while the radial edge of said sector located downstream in the direction of rotation of said disc is curved in a concave manner; and

(e) means for driving said distributor dish in a rotary oscillating path in a plane parallel to the surface of said disc about a vertical axis;

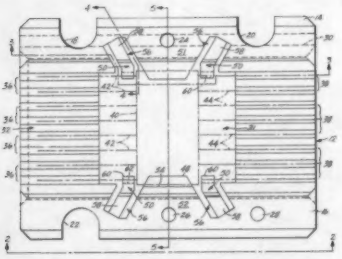
(f) whereby said articles fed into said feed reservoir are agitated sufficiently to prevent clogging of said reservoir and to facilitate their orderly reception in said recesses.

4,379,505

INTEGRATED CIRCUIT CARRIER

James C. Alemanni, Oceanside, Calif., assignor to Gibson-Egan Company, Duarte, Calif.

Filed Oct. 20, 1981, Ser. No. 313,000
Int. Cl.³ B65D 73/02, 85/42
U.S. Cl. 206—329 10 Claims



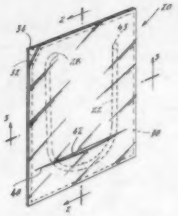
1. A carrier for an integrated circuit flat pack having a body with a plurality of leads projecting from opposite ends of the body, the carrier comprising a base; an opening in the base for receiving the body of the flat pack; end walls at opposite ends of the opening having a plurality of grooves for receiving the leads of the flat pack; resilient retaining fingers on the base extending generally into corners of the opening, the retaining fingers having flanged tips in which the flanges project toward the opening transversely to the length of the grooves at opposite ends of the opening; separate ridges on the base extending into opposite sides of the opening for holding the bottom edges of a flat pack body inserted in the opening; the retaining fingers being bendable away from the opening, under application of an external bending force, for allowing the leads of the flat pack to bypass the bent retaining fingers and fit into the grooves at opposite ends of the opening, the retaining fingers returning to a normal locking position, when the external bending force is released, for positioning the flanged tips of the fingers over adjacent leads of the flat pack for retaining the flat back in the opening of the carrier.

4,379,506

CATHETER ASSEMBLY

Alan C. Davidson, 15 Edgehill Dr., Woodbridge, Conn. 06525

Filed Apr. 2, 1981, Ser. No. 250,239
Int. Cl.³ B65D 27/36, 85/08
U.S. Cl. 206—364 10 Claims



1. A package assembly for storing a device such as catheters and the like in a sterile manner while enabling manual removal of the device without breaking its sterility, comprising:

a bottom layer underlying the device;

a top layer overlying the device and the bottom layer and being releasably attached to the top layer to retain the device between the layers, said bottom and top layers being formed of a material enabling the protection of the device against contamination, said top layer further being sufficiently flexible while attached to the bottom layer to enable one to manually grip the device through said top layer while attached to the bottom layer, said top layer being separable from said bottom layer while gripping the device with one hand through the top layer and tearing away the bottom layer from the top layer with the other hand;

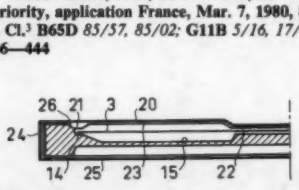
said top layer being provided with a backing located on a side opposite to the bottom layer, said backing being attached to said top layer at spaced locations selected to enable said one hand to fit between the backing and the top layer to permit the back of said hand to restrain said top layer as the bottom layer is torn away in a direction away from said hand, whereby upon said layer separation said device is exposed for use while being held in a sterile manner by said one hand through the separated top layer.

4,379,507

OPTICAL DISK CASSETTE

Raymond Llabres, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 6, 1981, Ser. No. 241,112
Claims priority, application France, Mar. 7, 1980, 80 05197
Int. Cl.³ B65D 85/57, 85/02; G11B 5/16, 17/00
U.S. Cl. 206—444 9 Claims



1. A cassette for an optical disk of the type comprising a plate possessing a first circular cavity for taking an optical disk and an envelope for containing the said plate, the envelope having an opening through which the plate may be inserted and the disk possessing a recording area on each side defined by two concentric circles of given first and second diameters, a second annular cavity being provided at the bottom of said first cavity of inner and outer diameters respectively less than and greater than those of the first and second given diameters, and in which a third cavity also of annular shape and of dimen-

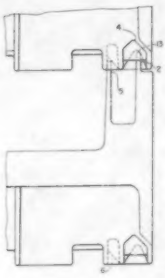
sions virtually equal to those of said second cavity is provided in the inner surface of the envelope cover, said second and third cavities being concentric when the plate is inserted in the envelope so that only unrecorded portions of said disk touch said plate or envelope independent of the orientation of said cassette in space.

4,379,508

NESTING TRAY WITH STACKING KEYED INTERLOCK

Daniel R. Miller, Cincinnati; Thomas Deaton, Mason, and Robert Royer, Cincinnati, all of Ohio, assignors to Nestier Corporation, Cincinnati, Ohio

Filed Oct. 14, 1981, Ser. No. 311,376
Int. Cl.³ B65D *21/04*
U.S. Cl. 206—507 8 Claims



1. A plurality of trays, comprising:

each tray being of a one piece construction molded from synthetic resin material, having a rectangular structure, parallel opposed side walls, a bottom wall and parallel opposed end walls, said side walls and said end walls extending vertically upward from said bottom walls, said end walls having a height greater than said side walls, and said end walls having free upper and lower edges:

said side walls and said end walls having surface means formed thereon for enabling said trays to be stacked in a vertically aligned position, and for enabling said trays to be stacked in a nested position when one of said trays is rotated at least 90 degrees relative to another of said trays about an axis perpendicular to said bottom walls from said stacked position;

said surface means including upper stacking elements formed integrally with said end walls extending along said upper edges of said end walls, and lower stacking elements formed integrally with said end walls at said lower edges of said end walls;

one of said upper and lower stacking elements comprising a ridge and the other of said upper and lower stacking elements comprising groove means wide enough and deep enough to receive said ridge;

web means extending across the width of said groove means for preventing the seating in said groove means of portions of said ridge which are vertically aligned with said web means when said upper and said lower stacking elements of adjacent stacked trays engage;

said ridges including notches having dimensions that correspond with the dimensions of said web means such that the engagement of said web means within said notches permits the seating of said ridge within said groove means of adjacent stacked trays;

a first plurality of said trays being identical and having a unique pattern of said web means and corresponding said notches of said upper and said lower stacking elements so that when said first plurality of said trays are stacked on and vertically aligned with one another each of said web means will be received within a notch of the adjacent tray;

a second plurality of said trays being identical to each other and differing from said first plurality of said trays substantially only in having a second unique pattern of said web means and corresponding said notches of said upper and said lower stacking elements so that when said second plurality of said trays are stacked on and vertically aligned with one another each of said web means will be received within a notch of the adjacent tray; and

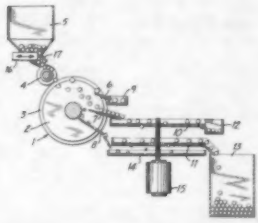
said first plurality of said trays unique pattern having a difference between said second plurality of said trays unique pattern such that said difference prevents the seating of said ridge of any one of said first plurality of said trays within said groove means of any one of said second plurality of said trays.

4,379,509

HIGH EFFICIENCY SORTING APPARATUS

Lorenz Bohle, Im Luren 5, 4722 Ennigerloh, Fed. Rep. of Germany

Filed Jan. 15, 1981, Ser. No. 225,350
Int. Cl.³ B07C *5/34*
U.S. Cl. 209—598 17 Claims



1. Apparatus for sorting items according to size comprising a pair of opposed sorting discs having facing sides with the spacing between said sides varying radially of said discs, means for depositing items to be sorted to between said facing sides of said sorting discs and means interposed at various radial locations between said facing sides for withdrawing said items separately from between said sorting discs in accordance with the size of said items; said depositing means being located to permit said items to fall by force of gravity to between said facing sides of said sorting discs; said depositing means comprising container means, oscillating conveyor means for receiving said items from said container means, and a pair of feed discs having sides generally aligned with the facing sides of said sorting discs, said feed discs being arranged to receive said items from said conveyor means between said facing sides thereof and to deposit said items to between said facing sides of said sorting discs.

4,379,510

METHOD AND APPARATUS FOR SORTING STONES

Douglas H. Ziegel, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 31, 1981, Ser. No. 249,730
Int. Cl.³ B07C *5/00*; G01N *21/00*
U.S. Cl. 209—643 8 Claims

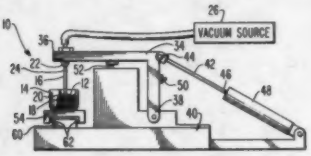
1. An apparatus for sorting stones contained within a supply reservoir by viewing said stones individually through a microscope comprising:

a pick-up tube having a first opening disposed at one end thereof, said first opening adapted to form a substantially airtight seal with one of said stones,

a vacuum source connected to a second opening disposed at the other end of said pick-up tube, said second opening being in communication with said first opening,

support means supported by a platform and connected to the other end of said pick-up tube for moving the one end of said tube between a first position disposed at a transfer

location whereat said one end is exposed to the stones within the supply reservoir, and a second position outside said reservoir whereat said one end is positioned exactly within the field of view of an objective of said microscope such that a stone held adjacent said first opening is disposed precisely at the focal length of said microscope objective, and



a sliding tray adapted to support said supply reservoir along with a reject reservoir and an accept reservoir, said tray attached to said platform by means for sliding said tray back and forth to allow each of said reservoirs to be positioned at said transfer location wherein the one end of said pick-up tube, while at said first position, has access thereto.

4,379,511

DEVICE FOR DRAWING LIQUIDS FROM CONTAINERS

Mario F. del Fabro, Santiago, Chile, assignor to Flora del Fabro Y Cia. Ltda., Santiago, Chile

Filed Apr. 30, 1981, Ser. No. 259,196
Claims priority, application Chile, May 9, 1980, 308/80
Int. Cl.³ B65D *83/00*
U.S. Cl. 215—1 A **13 Claims**

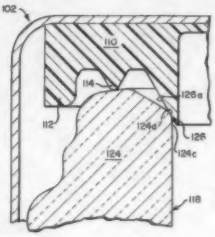
1. A straw through which liquid can be drawn comprising at least one extended open channel member having flotation means connected to said channel member which flotation means extends the full length of said channel member for causing the device to float at a predetermined level within the liquid.

4,379,512

CLOSURE HAVING AN IMPROVED LINER

Hidehiko Ohmi, Hiratsuka; Katsuhisa Kitagawa, Kasugai; Shoji Morimoto, Komaki; Tateo Kubo, Hiratsuka; Misao Ohno, Komaki, and Seitaro Takahashi, Komaki, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Nov. 19, 1980, Ser. No. 208,398
Claims priority, application Japan, Nov. 24, 1979, 54-151334
Int. Cl.³ B65D *53/04*
U.S. Cl. 215—327 **4 Claims**



1. A closure including a metal shell having a circular top surface and a substantially cylindrical skirt depending from the peripheral edge of the top surface, and a synthetic resin liner press formed on the inside top surface of the shell with the liner having at least first and second concentric annular projections with said first annular projection being positioned radially outwardly of said second annular projection and with the inner peripheral surface of said first annular projection adapted to seal with the outer peripheral surface of a container including a mouth having an upper horizontal surface; the improvement comprising in that said second annular projection has a radial thickness such decreases towards a projection tip at the end thereof and has a radially outward peripheral surface inclined radially inwardly towards said tip with said tip adapted to initially contact the horizontal upper surface of a container to be bent inwardly when the shell and liner are sealed to a container and said radially outwardly peripheral surface adapted to be bent radially inwardly when positioned against an upper surface of a mouth of a container to form a seal therewith and in that a third concentric annular projection is positioned radially inwardly of said second annular projection and is adapted to initially contact an inner peripheral edge of the mouth when the shell and liner are sealed to a container and then to be bent inwardly to be spaced from the inner peripheral edge of the mouth.

4,379,513

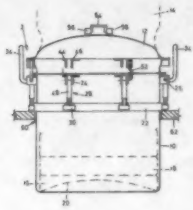
PRESSURE VESSEL FASTENING MEANS

Ernest P. Basterfield, Bedfordview, and Llewellyn P. Basterfield, Silvermont, both of South Africa, assignors to Chern Developments (Proprietary) Limited, Edenvale, South Africa

Filed Jun. 18, 1981, Ser. No. 274,727
Claims priority, application South Africa, Jun. 30, 1980, 80/3903
Int. Cl.³ B65D *45/16*
U.S. Cl. 220—325 **5 Claims**

1. A pressure vessel comprising a container, a lid sealingly engageable with the container, and means for securing the lid to the container in an air tight manner, the securing means comprising a plurality of brackets on the lid and a plurality of clamping devices which are on the container, each bracket including two supports which are spaced from each other and fixed to the lid, extending radially outwardly from the lid, the outer end of each support including an upwardly extending formation, and each clamping device including a threaded shank which is pivotally movable into the space between the two supports, and a member threadly engaged with the shank which is screwed down to secure the lid to the container, the

upwardly extending formations on the supports permitting a degree of release of the clamping device and preventing pivotal movement of the shank out of the space when the threaded



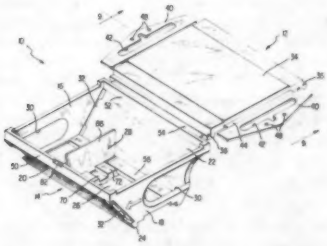
member is below a first position on the shank, so that excess pressure can escape from the container while the lid is still secured to the container.

4,379,514

BLADE HOLDER AND DISPENSER

Edward J. Joffe, Linden, N.J., assignor to Howard Strauss, Union, N.J., a part interest

Filed Mar. 26, 1981, Ser. No. 247,994
Int. Cl.³ B65G 59/00
U.S. Cl. 221—279 8 Claims



1. A holder and dispenser for replaceable knife blades comprising:

a back plate having a rectangular main portion;

a cover having a front face, opposed side faces and opposed end faces, said cover mating with said back plate to define therewith a magazine for receiving a plurality of blades in stacked relation, at least one end face having an aperture extending partially thereacross from one side face, the opposite side face having a blade discharge slot immediately adjacent said one end face, the front face having an opening extending the length thereof and, on each side of said opening and extending the length thereof, a rail recessed from the front surface of said front face; and

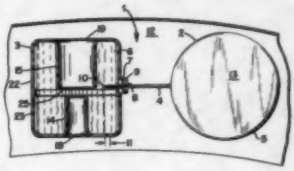
a manually movable follower slideably received in said opening of said front face, said follower including a plate portion projecting into said magazine and shoulder portions slidingly engaging each of the rails of the sides of the opening.

4,379,515

AUTOMATIC DISPENSER FOR RINSE WATER ADDITIVE

Marvin S. Towsend, 1365 Potomac Heights Dr., Fort Washington, Md. 20744

Filed Sep. 25, 1981, Ser. No. 305,720
Int. Cl.³ B67D 5/08
U.S. Cl. 222—52 10 Claims



1. An article for automatically dispensing laundry additive during the rinse cycle in an automatic washing machine, comprising:

a reservoir having a collapsible wall and a quantity of laundry additive, said wall being collapsible during the spin cycle of the automatic washing machine;

a rigid receptacle for receiving the laundry additive and for dispensing the laundry additive; and

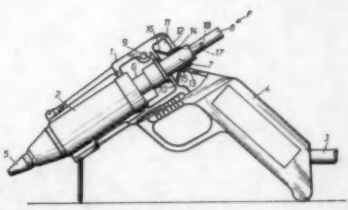
a communication means for passing the laundry additive from said reservoir to said receptacle during the spin cycle.

4,379,516

DEVICE FOR DISPENSING FUSED MATERIALS SUCH AS THERMOPLASTIC ADHESIVES

Rene Barlogis, Vagney, France, assignor to Societe Francaise d'Agrafage Industriel - Sofragraf, Vagney, France

Filed Dec. 12, 1980, Ser. No. 215,739
Claims priority, application France, Dec. 14, 1979, 79 30718
Int. Cl.³ B67D 5/62
U.S. Cl. 222—146 HE 11 Claims



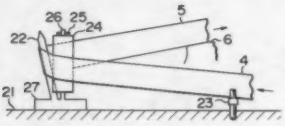
1. A device for dispensing a fused material such as a thermoplastic adhesive, comprising a housing equipped with a heating chamber including a delivery nozzle and an inlet tube for progressively introducing a rod of the material to be dispensed into said heating chamber, whereby the material of the introduced rod is progressively fused and expelled outside of the heating chamber through said delivery nozzle, a clamping member arranged so as to catch the rod, so that said clamping member is carried away with said rod when a push is exerted on said rod, and means for generating a resilient return force when said clamping member is carried away with said rod, so that said rod is brought rearwards under the action of said return force when a push is no longer exerted on said rod.

4,379,517

MAGNETIC TAPE RUNNING SYSTEM

Seii Miyakawa; Manabu Ikeda, both of Yokohama; Shin Hashizume, Kamakura, and Kazunori Iijima, Shimoinayoshi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 28, 1980, Ser. No. 201,615
Claims priority, application Japan, Oct. 29, 1979, 54-138791
Int. Cl.³ B65H *17/22*
U.S. Cl. 226—189 5 Claims



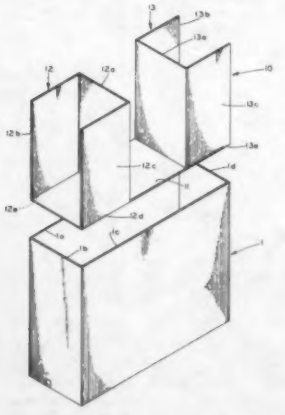
2. In a magnetic tape running system in which said magnetic tape is guided by guide rollers and tape guides such that said magnetic tape runs along a cylinder lead with a selected inlet angle so as to effect magnetic recording and reproduction: the improvement comprising means including an adjustable tape guide for guiding the lower edge of said magnetic tape to determine the vertical position thereof and a guide roller having a stopper for limiting axial movement of said guide roller around which said tape passes, the inlet side and outlet side of said magnetic tape to said guide roller being inclined downwardly to the inlet side and upwardly to the outlet side respectively at a predetermined angle (θ) to the line normal to the axis of said guide roller, and means for finely adjusting said predetermined angle (θ) by moving up and down said adjustable tape guide to cause said magnetic tape to move along the selected inlet angle of said cylinder lead.

4,379,518

THREE CELL DIVIDER FOR CARTON

Edwin C. Taylor, Sr., Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 17, 1981, Ser. No. 293,824
Int. Cl.³ B65D *5/48*
U.S. Cl. 229—15 4 Claims



1. A three cell corrugated divider for insertion in an open top of a rectangular box comprising a single blank folded to define:

(1) a horizontal bottom portion insertable in the box and conforming to the bottom of the box;

(2) a first horizontally U-shaped vertical divider having the vertical bight portion adapted to traverse the space between opposed side walls of the box and two vertical arm portions respectively adapted to abut opposed end areas of said opposed side walls, only one of said vertical arm portions being foldably secured to a portion of one edge of said horizontal bottom portion, and

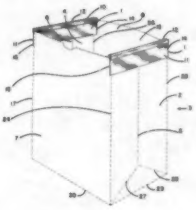
(3) a second horizontally U-shaped vertical divider having a vertical bight portion adapted to traverse the space between said opposed side walls of the box in horizontally spaced relation to the bight portion of said first vertical divider and two vertical wall portions respectively adapted to abut the other opposed end areas of said opposed side walls of the box, only one of said vertical wall portions of said second vertical divider being foldably secured to a portion of the other edge of said horizontal base portion.

4,379,519

PAPER BAG STIFFENER

Tom W. Sherwood, Las Vegas, Nev., assignor to Unique Products Company, Inc., Las Vegas, Nev.

Filed Apr. 20, 1981, Ser. No. 255,540
Int. Cl.³ B65D *33/02*
U.S. Cl. 229—55 3 Claims



1. In combination, a bag adapted to be maintained in an open position or a folded position, the bag having front, rear, and opposing side panels defining a rectangular horizontal cross-section when the bag is in the open position, upper edges of said panels defining a bag mouth, the opposing side panels having the intermediate vertical creases therein, and

stiffening members, each having a length greater than the horizontal dimension of the side panel of the bag, removably mounted over the upper edges of the opposing side panels to maintain the bag mouth in the open position.

4,379,520

TEMPERATURE REGULATING SYSTEM FOR AIR CONDITIONING OR HEATING PLANTS, PREFERABLY IN RAILWAY VEHICLES

Peter Tomsu, Vienna, Austria, assignor to Alex Friedmann Kommanditgesellschaft, Vienna, Austria

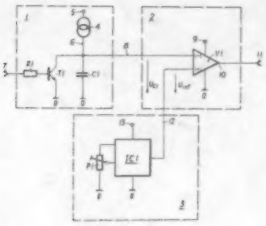
Filed Aug. 5, 1981, Ser. No. 290,211
Claims priority, application Austria, Aug. 6, 1980, 4057/80
Int. Cl.³ G05D *23/00;* G01K *7/00*
U.S. Cl. 236—49 6 Claims

1. A temperature-regulating system for an air conditioning or heating plant which includes

a programmable digital processing unit which includes at least one input and at least one output, and

a value-measuring unit which includes at least one temperature sensor, a capacitor, a switching element, a switching means and a reference voltage-generating means, each temperature sensor being connected to a capacitor so as to charge the capacitor by a current proportional to the measured temperature, the switching element being connected to the output of the digital processing unit and to the capacitor so as to cause the capacitor to discharge at a rate determined by the digital processing unit, the switch-

ing means including an output connected to the input of the digital processing unit and two inputs, the capacitor being connected to one input of the switching means and the other input of switching means being connected to the reference voltage-generating means, the digital processing unit acting via the switching element to discharge the



capacitor and also repeatedly checking the output of the switching means for a signal change, the number of such checks commencing from the beginning of measurement to a change in the signal representing digital values corresponding to the measured temperature, the switching means changing its output signal when the capacitor voltage reaches the reference voltage.

4,379,521

SPRING RAIL FASTENING SYSTEM

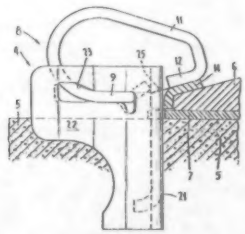
Hartley F. Young, Melton, Australia; Hendrikus M. Verhoef, deceased, late of Broadview, Australia (by Edmund M. Verhoef, executor), and Wally A. Remes, Redwood Park, Australia, assignors to Ralph McKay Limited, Victoria, Australia

Filed Dec. 19, 1980, Ser. No. 218,109

Claims priority, application Australia, Dec. 19, 1979, 54004/79

Int. Cl.³ E01B *9/30, 21/04, 29/24*

U.S. Cl. 238—349 **3 Claims**



1. A rail fastening system by which a rail is secured, by elastic rail clips mounted to press on the rail flange, to a tie comprising in combination (a) an elastic rail clip comprising a U-shaped member having a base and two arms extending therefrom, said base adapted to be secured to said tie outwardly spaced from the foot of said rail, said arms being bent inwardly beyond said base and oriented for contact with the flange of said rail such that said arms are deflected upwardly relative to said rail to develop downward clamping forces tending to hold said rail on said tie, said clip being formed from metal plate and each arm of the clip being tapered; (b) a clip holder adapted to be secured to a rail tie and being formed from metal plate, said clip holder comprising a vertically oriented channel section, the sides of which extend away from said rail and are slotted toward the base of the channel section which lies adjacent to said rail, said slots being adapted to receive said one portion of the rail clip, and an upwardly inclined surface on the top edge of the base of said vertically oriented channel section such that the top edge of said inclined surface is at least at the level of the foot of said rail; and (c) a rail locking element adapted for location between the clipholder and the rail flange, the locking element interfitting with said clipholder in a wedge-like relationship such that movement of the locking element in the longitudinal direction of the rail is translated into a holding force perpendicular to the edge of the rail flange, said locking element being formed of an electrically insulating material and (d) an insulator pad for location between the rail and the tie.

4,379,522

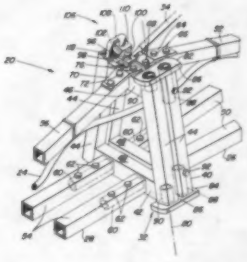
FOLDING SPRAY BOOM ASSEMBLY

Marion D. Elliott, Woodward, and Wendell D. Reece, Ankeny, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 13, 1981, Ser. No. 253,494

Int. Cl.³ B05B *1/20*

U.S. Cl. 239—167 **15 Claims**



1. In a mobile sprayer adapted for forward movement over a field and having a support frame, a spray boom assembly comprising:

an inner boom and an outer boom, each said boom having inboard and outboard ends;

means for mounting the inboard end of the inner boom on the boom support frame;

hinge means pivotally connecting the outboard end of the inner boom to the inboard end of the outer boom for rocking outer boom with respect to the inner boom generally horizontally about a substantially upright axis between preselected positions including a generally outwardly extending, unfolded position and an inwardly extending, folded position;

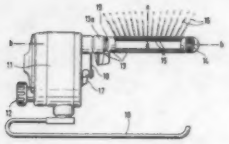
elongated support means extending above the inner boom connected to the outer boom adjacent the hinge means and to the support frame and tensioned therebetween for providing vertical stability to the inner and outer booms when the latter is in either its folded or unfolded position; and

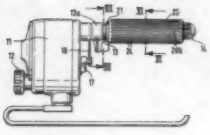
overcenter means connecting the support means to the outer boom for biasing the outer boom towards the unfolded position when it is within a range of positions between the unfolded position and an intermediate position between said folded and unfolded positions, said overcenter means including a bracket member fixed to the outer boom and offset in the fore-and-aft direction to one side of the pivotal axis when the outer boom is in the unfolded position, said bracket offset to the opposite side of the axis when the outer boom is in the folded position.

4,379,523
SPRINKLER

Friedrich Schanz; Emil Schücker, both of Calw, and Alexander Perrot, Althengstett, all of Fed. Rep. of Germany, assignors to Perrot-Regnerbau GmbH & Co., Calw, Fed. Rep. of Germany

Filed Sep. 4, 1981, Ser. No. 299,521
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1980, 3033417
Int. Cl.³ B05B 3/06
U.S. Cl. 239—222 9 Claims





1. A swivelling fan-jet sprinkler which is convertible from a coarse sprinkling mode in which it covers a relatively large irrigation area to a gentler spraying mode in which it covers a smaller irrigation area, the sprinkler comprising in combination:

a sprinkler housing with a sprinkler stand supporting the housing;

a hose connector on the sprinkler housing for the supply of pressurized water to the sprinkler housing;

a tubular nozzle cylinder having a longitudinal axis, said tubular nozzle cylinder extending horizontally from the sprinkler housing in a cantilever fashion, the nozzle cylinder being rotatably supported by the sprinkler housing and having arranged on an upper side of said nozzle cylinder a row of nozzle bores oriented in a diverging fantail spray pattern with a common plane;

means utilizing the water flow in the sprinkler housing for driving the nozzle cylinder to execute a slowly reciprocating swivelling motion about said longitudinal axis; and

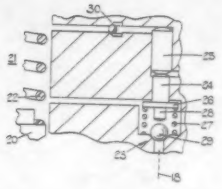
a spinner cage having a longitudinal bore extending therethrough, and a plurality of passage means extending from said longitudinal bore to an outer surface of said spinner cage for causing rotation of said spinner cage upon impact by water jets exiting from the nozzle bores, said spinner cage having positioning means cooperating with the tubular nozzle cylinder for axially positioning the spinner cage on the nozzle cylinder in a freely rotatable manner for readily attachable and detachable connection to the nozzle cylinder for the conversion of the latter from a coarse sprinkling mode with a detached spinner cage to a gentle spraying mode with an attached spinner cage; and wherein

the spinner cage, when attached to the sprinkler, surrounds the nozzle cylinder, being freely rotatable thereon, the water jets exiting from the nozzle cylinder being disturbed by the spinner cage, while imparting a rotary motion to the latter to accomplish said gentler spraying mode.

4,379,524
FUEL INJECTION NOZZLES

Richard J. Andrews, Guildford, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Mar. 18, 1981, Ser. No. 245,166
Claims priority, application United Kingdom, May 16, 1980, 8016231
Int. Cl.³ F02M 61/20
U.S. Cl. 239—533.8 5 Claims



1. A fuel injection nozzle comprising a fuel pressure operable valve member slidable within a bore, a seating at one end of the bore, the valve member being shaped for co-operaton with said seating to prevent fuel flow from an inlet to an outlet, resilient means for biassing the valve member into contact with the seating, a chamber, a valve through which fuel under pressure can flow to said chamber, a surface in said chamber, the fuel pressure acting on said surface creating a force which assists the action of said resilient means characterized in that the valve is located in a first passage connecting said inlet with said chamber, said valve including a valve element and a valve seating, the valve element being lifted from the valve seating by the fuel pressure at the inlet to allow fuel flow into said chamber, a first piston subject at one end to the pressure in said chamber, a second piston of larger diameter than the first piston, one end of said second piston being engaged with the other end of said first piston, a second passage through which the other end of said second piston is subject to the pressure in said chamber, resilient means opposing movement of the pistons under the action of the pressure in the chamber acting on the differential area of the pistons, said pistons being positioned so that when they move against the action of the resilient means, the valve element of said valve will be held upon the valve seating to prevent a further increase in the pressure of fuel in the chamber.

4,379,525
PROCESS FOR RECYCLING PLASTIC CONTAINER SCRAP

Casimir W. Nowicki, Sylvania, and Alan M. Jaffee, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 6, 1981, Ser. No. 290,643
Int. Cl.³ B02C 19/14
U.S. Cl. 241—20 15 Claims

1. A process for purifying scrap plastic granules from thermoplastic containers by removing label residue therefrom comprising the steps of:

(a) charging a mixing tank with a batch of said granules;

(b) charging said mixing tank with hot water from a hot water reservoir to form a mixture of said hot water and said granules;

(c) agitating said mixture to separate a first portion of said label residue from said granules;

(d) removing said hot water and said label residue from said granules;

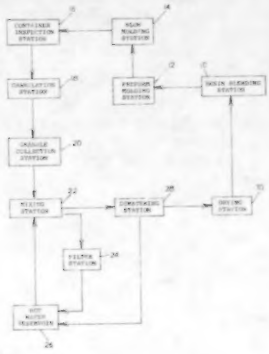
(e) filtering said label residue from said hot water;

(f) returning said hot water to said reservoir;

(g) repeating steps b–f sufficiently to remove substantially all of said label residue from said granules;

(h) charging said mixing tank with an amount of said hot water from said reservoir to overflow said granules over an overflow weir into a dewatering tank;

(i) separating said granules from a major portion of said hot water and returning said hot water to said hot water reservoir; and



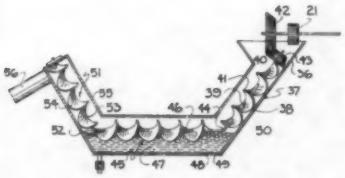
(j) subsequently drying said granules to remove substantially all of said residual water from said granules.

4,379,526

ORE MILL AND METAL SEPARATING DEVICE

William E. Dodds, 478 Jessie Ave., Winnipeg, Manitoba, Canada (R3L 0P6)

Filed Feb. 9, 1981, Ser. No. 232,916
Claims priority, application Canada, Apr. 21, 1980, 350311
Int. Cl.³ B02C 4/02
U.S. Cl. 241—79.1 6 Claims



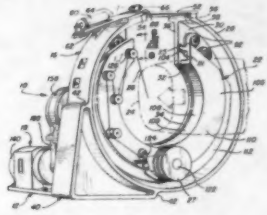
1. An ore mill and metal separating device, said separating device comprising in combination means to receive the mill sludge from the ore mill, conveyor means conveying said sludge from said means to receive same, a mercury bed, said conveyor moving said sludge to one side of said bed and through said bed and discharging means at the other end of said bed, said separating device including a first solid blade type screw conveyor portion inclining downwardly at an angle from said means to receive the mill sludge, a substantially horizontal container for said mercury bed, a central, solid blade type screw conveyor spanning said container and being partially submerged in the mercury within said mercury bed and being operatively connected by one end thereof to one end of said first conveyor portion, and a third solid blade type screw conveyor portion inclining upwardly at an angle from the other end of said bed and being operatively connected by one end thereof to the other end of said central screw conveyor thereby forming a continuous articulated conveyor assembly.

4,379,527

SHUTTLE DRIVE ASSEMBLY

Ronald T. Albo, Los Gatos; James E. Carney, Jr., Santa Cruz, and Robert E. Riehl, Sunnyvale, all of Calif., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00020, § 371 Date Jan. 9, 1980, § 102(e) Date Jan. 9, 1980, PCT Pub. No. WO81/02000, PCT Pub. Date Jul. 23, 1981
PCT Filed Jan. 9, 1980, Ser. No. 130,490
Int. Cl.³ B65H 81/04; B29H 17/02; H01F 41/08
U.S. Cl. 242—4 BE 17 Claims



1. A shuttle drive assembly (10) having a base (12) and comprising:

a support frame (16) carried by said base (12) and having an article-receiving opening (32) in the midportion therein, said support frame (16) having a cutout segment providing an access passage (38) into said article-receiving opening (32) therein,

a shuttle (22) having an article-receiving opening (108) in the midportion thereof, said shuttle (22) having a cutout segment providing an access passage (106) into said article-receiving opening (108) therein, said opening (108) and passage (106) in said shuttle (22) being alignable with the opening (32) and passage (38) in said frame (16) for receiving a toroidal-shaped article (24) in said aligned openings (108,32) through the aligned access passages (38,106) in said frame (16) and said shuttle (22),

means (85,87) for supporting and rotatably driving said shuttle (22), said means (85,87) including a drive roll assembly carried by said frame (16) and having drive rollers (92), mating means (115) for engaging with said drive rollers (82), said mating means being mounted on said shuttle (22) and disengaging from each of said drive rollers (82) during a portion of each full rotation of said shuttle (22),

a motor (140), and

motion transmission means (192, 191, 190, 186, 188) for connecting said drive roll assembly means (85,87) to said motor (140) for rotatably driving said shuttle (22) relative to said frame (16) in a plane substantially transverse to said toroidal-shaped article (24),

said drive roll assembly means (85, 87) comprising a plurality of long drive roll assemblies (87) and a plurality of short drive roll assemblies (85), each long drive roll assembly (87) having two axially aligned pulleys (84,84) on one side of said frame (16) and a roller (92) on the other side of said frame (16).

4,379,528

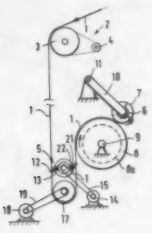
THREAD REELING APPARATUS

Alfred Tschentscher, Cologne, Fed. Rep. of Germany, assignor to FMN Schuster GmbH & Co. KG, Fed. Rep. of Germany

Filed Apr. 15, 1981, Ser. No. 254,565
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016662
Int. Cl.³ B65H 54/28
U.S. Cl. 242—43 R 6 Claims

1. An apparatus for reeling thread on a bobbin, said apparatus comprising:

(a) a rotary cam drum having a helical groove extending along the longitudinal axis thereof,
(b) a first traversing thread guide assembly mounted to move along said helical groove and effective to guide the thread to-and-fro along the longitudinal axis of the rotary cam drum,
(c) tension controlling means located between the rotary cam drum and the bobbin to receive the thread from the first traversing thread guide assembly for controlling the tension of the thread, and



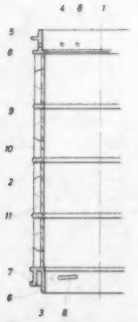
(d) a friction roller for rotating the bobbin,
(e) said tension controlling means including a smooth roller located downstream from said first traversing thread guide assembly for receiving a thread on its smooth peripheral surface and a second traversing thread guide assembly between the smooth roller and the friction roller,
(f) said second traversing thread guide assembly being effective to guide the thread between the smooth roller and the friction roller.

4,379,529

TUBE FOR YARN BOBBIN

Hans B. Nielsen, Bühlstrasse 3, CH-8125 Zollikerberg, Switzerland

PCT No. PCT/DK80/00033, § 371 Date Feb. 19, 1981, § 102(e) Date Feb. 19, 1981, PCT Pub. No. WO80/02832, PCT Pub. Date Dec. 24, 1980
PCT Filed May 28, 1980, Ser. No. 237,149
Int. Cl.³ B65H *75/20*
U.S. Cl. 242—118.11 **6 Claims**



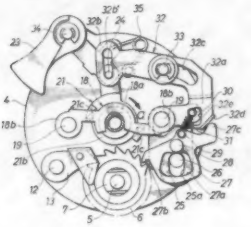
1. A tube made of molded plastic material for yarn bobbins of variable axial length, said tube including a plurality of axially spaced apart concentric rings each of which has a plurality of arms extending longitudinally of the tube, said arms having outer sides which together form a cylindrical or slightly conical surface of the tube for receiving yarn bobbins, said including and rings being connected together by resilient spring members molded integrally with said rings and located radially inward of said surface formed by said arms, said spring members being of such dimensions that the tube may be compressed in axial direction by virtue of the resilience of the plastic material and said spring members being stretchable in the axial direction of the tube and when so stretched said spring members extend substantially parallel to the generatrixes in the surface of the tube.

4,379,530

FISHING REEL

Takehiro Kobayashi, Fukuyama, Japan, assignor to Ryobi Limited, Fuchu, Japan

Filed Sep. 3, 1980, Ser. No. 183,768
Claims priority, application Japan, Sep. 3, 1979, 54-122129[U]
Int. Cl.³ A01K *89/02*
U.S. Cl. 242—220 **8 Claims**



1. A fishing reel comprising:
a base plate;
a main rod;
means for rotatably mounting said main rod relative to said base plate;
a handle;
a supporting shaft;
means for affixing said handle to said supporting shaft;
means for rotatably mounting said support shaft relative to said base plate;
a main gear;
means for affixing said main gear to rotate in unison with said supporting shaft;
a pinion;
means for slidably mounting said pinion in an axial direction on said main rod, said pinion being normally forced to mesh with said main gear;
a clutch lever;
means for mounting said clutch lever relative to said base plate to permit limited axial movement relative to said main rod;
means for affixing said clutch lever to said pinion;
a clutch cam;
means for rotatably mounting said clutch cam relative to said base plate;
a kick lever;
means for interlocking said kick lever with said clutch cam;
a slider;
means for slidably mounting said slider on said base plate;
means for attaching said kick lever to said slider wherein movement of said kick lever imparting a sliding movement to said slider;
a kick plate;
means for pivotally mounting said kick plate on said slider;
a ratchet wheel;
means for affixing said ratchet wheel to said support shaft, said ratchet wheel being coaxially mounted on said support shaft relative to said main gear;
said kick plate including a first end being selectively, operatively engageable with said ratchet wheel;
said kick lever being movable in a first direction to impart rotary motion to said clutch cam to axially move said

clutch lever and said pinion to disengage said pinion from said main gear, movement of said kick lever in said first direction imparts sliding motion to said slider to position said first end of said kick plate into operative engagement with said ratchet wheel, subsequent rotation of said handle imparts rotary movement to said support shaft and said ratchet wheel to impart a rotary movement to said first end of said kick plate to slide said slider and impart movement to said kick lever to rotate said clutch cam to axially move said clutch lever and said pinion to reengage said pinion with said main gear.

4,379,531

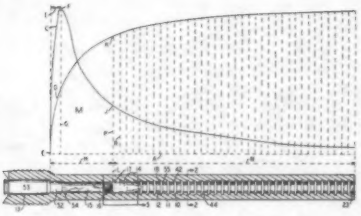
PROJECTILE

John R. Manis, 418 Millburn Ave., Millburn Township, Essex County, N.J. 07041

Division of Ser. No. 444,008, Feb. 20, 1974, Pat. No. 4,176,487, which is a continuation of Ser. No. 308,755, Nov. 22, 1972, abandoned, and a continuation of Ser. No. 90,608, Nov. 18, 1970, abandoned. This application Oct. 15, 1979, Ser. No. 84,735

Int. Cl.³ F42B *15/14*

U.S. Cl. 244—3.23 **8 Claims**



1. A firearm projectile, comprising,

a cylindric forward area, and a helicoidal rearward area in the form of a series of helical notches constructed and arranged to completely surround said rearward area, all of said helical notches structure arranged to begin immediately from the adjacent demarcation point of a laterally disposed one of the other of said notches construction.

4,379,532

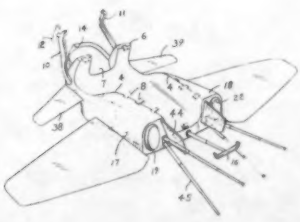
AIRCRAFT ATTACHABLE TO THE BODY OF A PILOT

Igor Dmitrowsky, 92-36 54th Ave., Elmhurst, N.Y. 11373

Filed Oct. 22, 1980, Ser. No. 199,496

Int. Cl.³ B64C *39/00, 15/02*

U.S. Cl. 244—4 A **3 Claims**



2. A winged aircraft comprising a saddle form aircraft body adapted at its exterior underside to be mounted upon and secured to the back of a pilot; multiple engines housed in the aircraft body having exhaust tubes opening through the rear of the aircraft body for issuing propulsive streams to propel and sustain the aircraft in flight; angularly adjustable fins projecting from opposite sides of the aircraft body for effecting selectable flight patterns; the exhaust tubes having terminal elements relatively pivotable to deflect issuing propulsive streams in selectable directions; pilot operable control means connected with the fins and the terminal elements for effecting simultaneously selective pivoting of the terminal elements and angular adjustment of the fins, the pilot operable control means including a handgrip swivelled to a handle for movement in selectable directions, and a plurality of control cables connecting the fins and the terminal elements with the handgrip; and the aircraft body having laterally spaced walls in each of which one of the engines is housed.

4,379,533

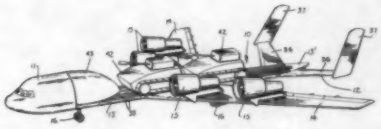
TRANSPORT AIRPLANE

Edward W. Caldwell, Kennesaw, and Rollo G. Smethers, Jr., Atlanta, both of Ga., assignors to Lockheed Corporation, Burbank, Calif.

Continuation of Ser. No. 54,275, Jul. 2, 1979, abandoned. This application Mar. 23, 1981, Ser. No. 246,670

Int. Cl.³ B64D *9/00*

U.S. Cl. 244—118.1 **9 Claims**



1. A transport airplane formed at the forward end by a control cabin and aft by a basic flyable backbone adapted to removably secure and carry a payload selected from at least one of a variety of payloads of different shapes and sizes thereon including sizes and shapes defining non-aerodynamic configurations extending beyond the limits of structural members forming a part of and carried by said backbone, said backbone comprising:

a flatbed formed by a payload supporting surface planar throughout its length and extending aft from the rear of said cabin adjacent the bottom thereof to the extremity of the airplane and substantially parallel to the ground at all times;

a pair of fixed wings one secured to and extending laterally from each side of said flatbed and below said payload supporting surface, said wings being located approximately midway between said cabin and said aft airplane extremity thereby establishing the location of the center of gravity of the airplane whereby said selected payload center of gravity is located vertically above and substantially aligned with said airplane center of gravity;

at least one engine carried by each said wing; and

an empennage formed by a horizontal aerodynamic surface contiguous to and extending laterally from each side of said flatbed below said payload supporting surface and a vertical surface extending upwardly from the outer end of said horizontal surface, said empennage being immovably secured to said flatbed at all times.

4,379,534

CARGO LIFT SYSTEM

Ralph A. Miller, Monmouth Beach, N.J., and Randall F. White, Paradise, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 2, 1981, Ser. No. 239,305

Int. Cl.³ B64D *1/08, 17/72*

U.S. Cl. 244—137 R **5 Claims**

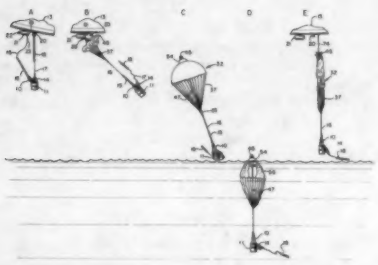
1. In a cargo lift system having a support bridle, support sling, and hook for transporting externally slung cargo by an elevated platform, an improved cargo recovery apparatus comprising, in combination:

a recovery bridle formed at one end to be connected to the cargo;

a streamlined container closed at one end;

pivot means connected between said ends of said container and formed to be secured to the platform for providing a 360° rotation of said container about a vetical axis therethrough to permit alignment of said other end of said container with the cargo;

a hinged door releasably connected at said other end of said container and having a shear pin for releasably latching thereto;



a pendant means formed at one end to be connected to said recovery bridle and at said other end having a connector through which said shear pin releasably latch said door to said container;

uninflated parachute means deployably stowed in said container; and

inflator means connected within said uninflated parachute means having a compressed gas reservoir for inflating said uninflated parachute means.

4,379,535

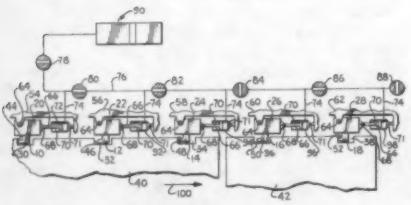
PALLET RESTRAIN SYSTEM

Floyd G. Baldwin, Garden Grove, and Donald E. Evans, Marina Del Rey, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jul. 6, 1981, Ser. No. 280,460

Int. Cl.³ B64D *1/10, 1/12*

U.S. Cl. 244—137 R **6 Claims**



1. A restraint system for use on floor in aircraft cargo bay to engage and hold a pallet in air drop sequence comprising:

two load sensitive latches moveably mounted on said floor in such a manner that they will engage one side of the pallet;

hydraulic actuators attached to said latches and to said cargo floor to provide movement to said latches;

hydraulic interconnection between hydraulic actuators to provide transfer of hydraulic fluid from one actuator to the other, thereby moving the latches into full engagement with said pallet, and

guide means to engage the side of the pallet opposite the load sensitive latches to assist in restraining and guiding of said pallet from said aircraft cargo bay.

4,379,536

MEANS FOR RETAINING A ROD-SHAPED MATERIAL

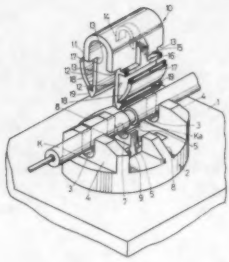
Yoshiro Mizuno, and Akihiko Kitamura, both of Aichi, Japan, assignors to Kojima Puresu Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 9, 1981, Ser. No. 241,673

Claims priority, application Japan, Mar. 11, 1980, 55-31317[U]

Int. Cl.³ F16L *3/08*

U.S. Cl. 248—73 **15 Claims**



1. For use in the support and retention of a rod-shaped material, having an annular groove peripherally thereabout, solely for rotational movement:

a mounting body having a top surface with a pair of laterally spaced slits defined therethrough, said mounting body being adapted to receive and support the rod-shaped material in overlying relation to said top surface between said slits;

a clip having a holding portion formed in generally U-shaped configuration for accommodation of said rod-shaped material therein, and a pair of depending leg members extending from said U-shaped holding portion and insertable through said top surface into said slits to the opposite sides of a body-supported rod-shaped material, each of said leg members having a resilient locking pawl extending from its lower end remote from said U-shaped configuration for resilient securing engagement with said slit, each locking pawl terminating in a free end and including an arresting face at the free end adapted to engage with the lower edge of the corresponding slit upon insertion of the leg member into the slit to preclude withdrawal of said pawl; and

at least one of said mounting body and said clip having a retaining element projecting therefrom for engagement with the annular groove formed on the periphery of said rod-shaped material.

4,379,537

CABLE HANGER

Frederick Perrault, Torrance, and Raymond E. Perrault, Rancho Palos Verdes, both of Calif., assignors to Whipple Patent Management Corporation, Sherman Oaks, Calif.

Filed Aug. 10, 1981, Ser. No. 291,350

Int. Cl.³ F16L *3/08*

U.S. Cl. 248—74 R **10 Claims**

1. A bracket for supporting a cable or the like comprising

a unitary one-piece member having

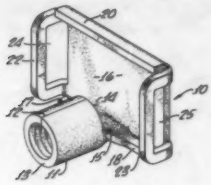
an internally threaded sleeve,

a substantially flat plate spaced from one end of said sleeve and substantially perpendicular to the axis thereof, with a portion of said substantially flat plate being opposite a portion of said one end of said sleeve,

an interconnecting element forming a continuation of and extending axially from said one end of said sleeve to one side edge of said substantially flat plate for connecting said sleeve to said plate,

and opposite end flanges projecting from said plate

toward said sleeve, said end flanges defining slots therethrough adapted to receive a strap extended around said plate to hold cables to the surface of said plate opposite from said sleeve.

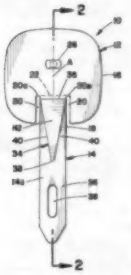


4,379,538

ARTICLE SUPPORTING DEVICE

Theodore W. Welles, 23400 Shaker Blvd., Shaker Heights, Ohio 44122

Filed Dec. 3, 1980, Ser. No. 212,494
Int. Cl.³ B65B 67/12
U.S. Cl. 248—95 16 Claims



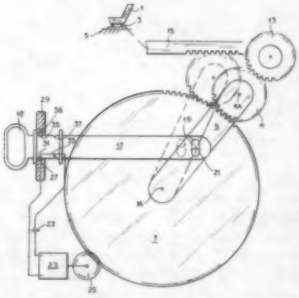
1. An article support comprising a mounting portion and a strap portion of thin flexible plastic material, said mounting portion and strap portion having corresponding front and back sides, means on said back side of said mounting portion for attaching said article support to a surface, said strap portion having an inner end interconnected with said mounting portion along a line of juncture and an outer end spaced from said line of juncture, said outer end of said strap portion being displaceable toward said mounting portion and to a fastening position in which said strap portion forms an article supporting loop having a bight portion between said line of juncture and said outer end for supporting an article in suspension means to releaseably retain said outer end of said strip portion in said fastening position, and said strap portion including constraining means between said line of juncture and said outer end constraining said bight portion of said loop to have a generally uniform curvature under the weight of an article supported in suspension thereby, said mounting portion having an outer peripheral edge and said inner end of said strap portion being defined by slits extending inwardly of said peripheral edge and having terminal ends spaced inwardly from said peripheral edge, said terminal ends being spaced apart to define said line of juncture between said inner end of said strap portion and said mounting portion, said constraining means including plastic member means integral with said front side of said strap portion and having an outer surface spaced outwardly from said front side, said plastic member means having a first end adjacent said terminal ends of said slots and a second end spaced from said first end in the direction toward said outer end of said strap portion, said outer surface of said plastic member means converging toward said front side of said strap portion in the direction from said first end toward said second end, said plastic member means further having opposite side edges between said first and second ends and converging with respect to one another in the direction from said first end toward said second end, and said means to releaseably retain said outer end of said strap portion in said fastening position including interengaging fastener means on said front side of said mounting portion and said outer end of said strap portion.

4,379,539

POWER SEAT ADJUSTER

Claude Rion, and Winfried Ruckheim, both of Ingolstadt, Fed. Rep. of Germany, assignors to Audi Nsu Auto Union Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany

Filed Dec. 18, 1980, Ser. No. 217,783
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952030
Int. Cl.³ A47G 25/00
U.S. Cl. 248—371 17 Claims



1. An adjuster for displacing an automotive seat relative to a vehicle frame, said adjuster comprising:

a sun gear centered on and rotatable about a sun gear axis relative to said frame;

a planet gear meshing with said sun gear;

support means for displacement of said planet gear angularly of said axis while in mesh with said sun gear between a pair of angularly offset end positions;

control means connected to said planet gear for displacing same between said end positions;

a first output gear meshable with said planet gear in one of said end positions;

a second output gear meshable with said planet gear in the other of said end positions;

drive means for rotating said sun gear and thereby rotating said planet gear and driving any gear in mesh with said planet gear from said sun gear; and

means connecting said output gears to said seat for displacement of said seat in a first direction when said first output gear is driven by said sun gear through said planet gear in said one position thereof and for displacement of said seat in a second direction different from said first direction when said second output gear is driven by said sun gear through said planet gear in said outer position thereof.

4,379,540

ADJUSTABLE SUPPORT DEVICES FOR SWIVEL CHAIRS

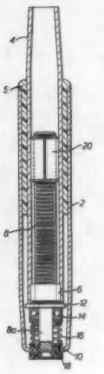
John A. W. French, Milton Keynes, England, assignor to WIPAC Group Sales Limited, Buckingham, England

Filed Oct. 2, 1980, Ser. No. 193,305

Claims priority, application United Kingdom, Oct. 6, 1979, 7934765

Int. Cl.³ F16M *11/00*

U.S. Cl. 248—406 1 Claim



1. In an adjustable support device for a swivel chair, of the type comprising inner and outer telescopic tubes having an axis arranged, in use, to extend vertically with the seat part of the chair mounted at the upper end of one of said tubes, said one tube being rotatable and the other tube being stationary, bearing means, a screw rotatably mounted within the inner and outer tubes on the axis of the tubes by said bearing means which permits the screw to rotate about a vertical axis, a nut rigid with the said one tube and engaged with the screw, said screw being mounted for vertical movement, spring means biasing said screw into an upper limit position, and friction clutch means comprising a first friction member carried by the screw, and a second, stationary, friction member, said first friction member engaging said second friction member in the upper limit position of the screw in order to prevent the screw from rotating whereby rotation of the nut relative to the screw in this position effects adjustment of the seat height, and said clutch means being released by downwards movement of the screw from its upper limit position by a vertical load applied when the chair is occupied, the improvement comprising a drag-applying member mounted on the screw and resiliently engaging the interior surface of the said one tube to apply a continuous but limited frictional drag between the screw and the nut, said drag being less than the force exerted by the engaged friction members of the clutch means to prevent rotation of the screw in the upper limit position, but said drag being sufficient to ensure that the screw and the nut rotate as a unit when the said one tube is swivelled with the chair occupied, the drag-applying member being of annular section and being interposed between the screw and the said one tube, and being split axially to provide the resilient bias.

4,379,541

HOLDER FOR A CONTAINER

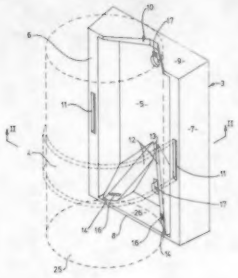
Donald M. Harkness, 294 Main North Rd., Christchurch, New Zealand

Filed Jun. 24, 1980, Ser. No. 162,435

Claims priority, application New Zealand, Jul. 23, 1979, 191083

Int. Cl.³ A47K *1/08*

U.S. Cl. 248—544 10 Claims



1. A holder for a container, comprising, a backplate one face of which has an engagement surface thereon, a ledge spaced from said engagement surface, the plane of said ledge being substantially perpendicular to said one face, a guide which slopes from said one face downwards and outwards towards said ledge, a step on said guide, and a semi-rigid retaining strap each end of which is secured to the backplate so as to define a space between part of one face of the retaining strap and said one face of the backplate, said part of one face of said retaining strap having thereon at least one projection with a curved outer face, said engagement surface, ledge, guide, retaining strap and projection being dimensioned and arranged such that when the holder is in use, a container occupies said space with at least part of the base of the container resting on said ledge, an upper part of the container wall bearing against said engagement surface, and an intermediate part of the container wall bearing against said projection.

4,379,542

SUSPENSION MEANS FOR MOUNTING AN INSTRUMENT SUSCEPTIBLE TO SHOCK

Ludwig Pietzsch, Max-Beckmann-Str. 27, 7500 Karlsruhe 41, Fed. Rep. of Germany, and Rudolf Hartmann, Karlsbad-Auerbach, Fed. Rep. of Germany, assignors to Ludwig Pietzsch, Karlsruhe, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 63,774

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1978, 2844114

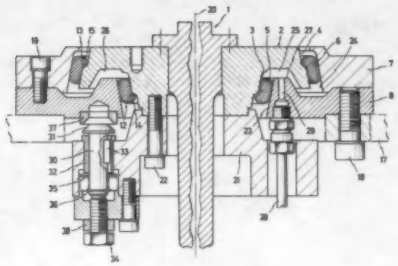
Int. Cl.³ F16M *13/00*

U.S. Cl. 248—561 21 Claims

1. A suspension means for mounting on a movable carrier an instrument or the like which is susceptible to shock, said means comprising:

flexible sealing means adapted to absorb shocks in at least one direction, said flexible sealing means including two coaxial, radially spaced rubber-elastic sealing rings which are biased between the annular surfaces of an inner ring connected with the instrument and an outer ring connected with the carrier, said inner and outer rings being

disposed to radially define a fluid pressure cavity which controls the axial spacing of said sealing rings; and



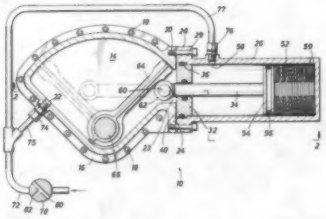
a blocking device adjustable against the resiliency of the sealing means in the axial direction for rigidly coupling the instrument with the carrier.

4,379,543

VANE TYPE VALVE ACTUATOR

V. Randon Reaves, Houston, Tex., assignor to Valinco, Inc., Houston, Tex.

Filed Aug. 5, 1980, Ser. No. 175,661
Int. Cl.³ F01C *9/00*; F16J *1/10*
U.S. Cl. 251—59 **6 Claims**



1. A valve actuator, comprising:

(a) a housing sealingly enclosing a vane connected to a valve via a shaft rotated by said vane;

(b) means for moving said vane in said housing to a valve open position;

(c) a movable piston and return spring enclosed by a piston housing fixedly secured to said vane housing, said piston joined to an elongate rod wherein one end of said rod protrudes through an opening in said vane housing to contact said vane;

(d) said elongate rod including a cylindrical cross-bar perpendicularly extending from said one end of said rod, said cross-bar providing a bearing surface for a bearing means to enable rolling contact with said vane.

4,379,544

TURBINE TRIP VALVE MECHANISM

Eugene V. Angelo, Greensburg, Pa., and Prem Pratap, Westboro, Mass., assignors to Elliott Turbomachinery Company, Inc., Jeannette, Pa.

Filed May 1, 1981, Ser. No. 259,398
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—74 **4 Claims**

1. A trip mechanism for a trip valve controlling the flow of operating fluid to a turbine comprising:

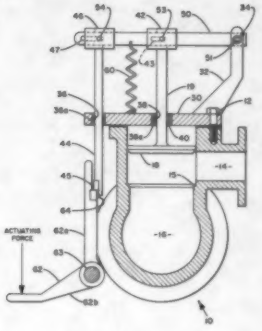
actuating means pivotally mounted and adapted to be moved by an actuating force;

valve body means having an inlet and an outlet with a valve seat therebetween;

a valve member in said valve body means and including a valve stem having an end extending through said valve body means in guiding arrangement whereby said valve member is guidably movable into and out of seating engagement with said valve seat;

guide stem means extending through a portion of said valve body means in guiding arrangement and having one end adapted to be engaged by said actuating means;

reset lever means pivotably secured to said valve body means and slidably secured to said end of said valve stem



and the other end of said guide stem means for movement therewith;

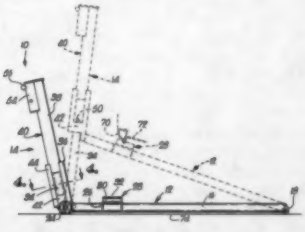
biasing means acting on said lever means to move said valve member to the seated position whereby when said guide stem means is engaged by said actuating means said valve member is held out of seating engagement with said valve seat and when said actuating means is acted upon by an actuating force and pivots in response thereto, said guide stem means becomes disengaged from said actuating means permitting said biasing means to move said reset lever means causing said valve member to seat and said guide stem means to move to a position preventing reengagement with said actuating means until manually reset.

4,379,545

SIDE LIFT JACK FOR UNIBODY AUTOMOBILES

Joseph L. Gray, and James J. Gray, both of St. Joseph, Mo., assignors to Gray Manufacturing Co. Inc., St. Joseph, Mo.

Filed Mar. 6, 1981, Ser. No. 241,436
Int. Cl.³ B66F *3/00*
U.S. Cl. 254—8 B **14 Claims**



1. A jack assembly for tilting a four wheel vehicle off the ground, comprising:

elongated lifting arm means presenting an inner end and an outer end;

upright post means including extensible means; and

means rigidly connecting said post means and arm means adjacent said inner end of the latter to present an included obtuse angle between the arm means and post means,

said arm means being constructed and arranged for positioning at least partially under said vehicle from one side thereof and of a length to extend across the width of the vehicle from said one side with said outer end engaging an outer contact area on the ground more than one-half of the wheel track dimension of said vehicle,

said assembly having inboard ground-engaging means for engaging an inner contact area on the ground proximal to said post means,

said extensible means including means for swinging the arm means through an arc to engage the vehicle and extert a tilting force thereon,

said included angle remaining constant during said travel of said arm means with said outer end of said arm means pivoting adjacent said outer contact area, and with said inboard ground-engaging means shifting along said ground, at least a portion of said shifting being toward said vehicle.

4,379,546

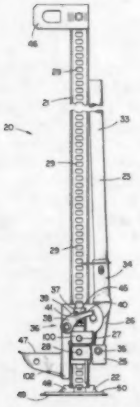
LIFTING JACK

Thomas K. McIntosh, Bloomfield, Ind., assignor to Bloomfield Manufacturing Co., Inc., Bloomfield, Ind.

Filed Jan. 19, 1981, Ser. No. 226,072

Int. Cl.³ B66F *1/04*

U.S. Cl. 254—111 **7 Claims**



1. A lifting jack comprising:

a standard having a plurality of spaced apertures;

an upper runner disposed about said standard;

a first climbing pin carried by said upper runner and adapted to fit within said apertures;

a lower runner disposed about said standard;

a second climbing pin carried by said lower runner and adapted to fit within said apertures;

level means pivotally attached to said upper runner for moving said upper runner along said standard;

a pitman pivotally attached at a first end to said lever means and at a second end to said lower runner thereby cooperatively coupling said upper and lower runners together, movement of said upper and lower runners including alternately positioning said first and second climbing pins into said apertures, said pitman being die-formed of a single-piece construction and having a generally U-shaped lateral cross-section configuration and having a narrowing taper from said second end to said first end; and

reversing means for changing the direction of movement of said upper and lower runners from a first direction to a second direction opposite to said first direction.

4,379,547

CONTINUOUS COLD ROLLING AND ANNEALING APPARATUS FOR STEEL STRIP

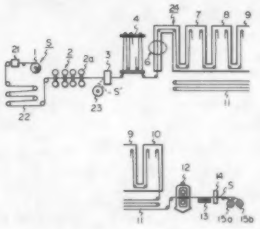
Ichiro Shimbashi; Hiroshi Ikegami, both of Kitakyushu, and Hideharu Bando, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 252,805

Claims priority, application Japan, Apr. 11, 1980, 55-46935

Int. Cl.³ C21D *7/02, 9/56*

U.S. Cl. 266—103 **5 Claims**



1. A continuous cold rolling and annealing apparatus for a steel strip, comprising:

a continuous annealing furnace having a heating zone;

at least one cold rolling mill located upstream of the entrance of said continuous annealing furnace for cold rolling a steel strip;

an intermediate reel for supplying a spare steel strip to said continuous annealing furnace when the supply of the steel strip from the cold rolling mill is interrupted, said intermediate reel being located between said cold rolling mill and said continuous annealing furnace;

a welder for connecting said spare steel strip to a previously processed steel strip, said welder being located between said intermediate reel and said continuous annealing furnace;

a coil car for supplying a spare steel strip coil to said intermediate reel; and

a coil skid which is capable of holding a plurality of spare steel strip coils thereon and of moving each spare steel strip to a predetermined position for supplying it to said coil car.

4,379,548

EXHAUST SYSTEM ESPECIALLY FOR USE IN THE CAST HOUSE OF A BLAST FURNACE

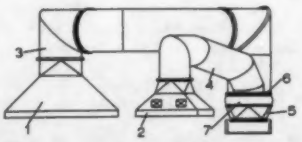
Billy Boshoven, Heerhugowaard, Netherlands, assignor to Estel Hoogovens BV., IJmuiden, Netherlands

Filed Mar. 6, 1981, Ser. No. 241,253

Claims priority, application Netherlands, Mar. 7, 1980, 8001371

Int. Cl.³ C21B *7/22;* C21C *5/38*

U.S. Cl. 266—158 **13 Claims**



1. In an exhaust apparatus, especially for use in the cast house of a blast furnace, comprising at least one movable

exhaust hood which is connected by a duct to a suction source for extraction of gas from the hood, said duct having a fixed duct section and a swivelling duct section swivellable about an axis and connecting the hood to the fixed duct section, the hood being carried by the swivelling duct section,

the improvement that:

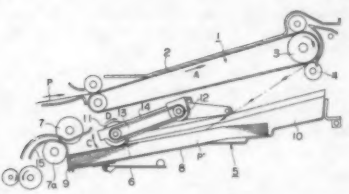
said fixed duct section and said swivelling duct section each have a portion extending generally coaxially with said axis of swivelling of the swivelling duct section, which portions are connected together, and that said swivelling duct section is supported so as to extend in cantilever fashion substantially freely to said hood, by low friction bearing means located outside the duct and extending circumferentially around the duct, and said bearing means is supported by said portion of the fixed duct section which thereby carries the swivelling duct section and the hood.

4,379,549

SHEET PAPER STACKING APPARATUS

Kenichi Mizuma, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Feb. 12, 1981, Ser. No. 233,623
Claims priority, application Japan, Feb. 29, 1980, 55-24712
Int. Cl.³ B65H 5/22
U.S. Cl. 271—3.1 **13 Claims**



1. Apparatus for receiving sheets of paper one by one to arrange them in the form of a stack and then discharging the thus stacked sheets of paper one by one, comprising:

a bottom plate on which said stack is to be formed;

side reference means for providing a side reference line with which one side edge of each of said sheets of paper is to be aligned;

front reference means for providing a front reference line with which the front edge of each of said sheets of paper is to be aligned;

rotating means disposed above said bottom plate, said rotating means being movable between two positions including an operative position where said rotating means brings said sheets of paper into alignment with said side and front reference lines during a sheet paper receiving mode and an inoperative position where said rotating means is separated away from said stack during a sheet paper discharging mode;

a discharging path for receiving sheets from said stack, said discharging path extending from an entrance thereto located above said front reference means;

discharging means disposed in the vicinity of the entrance of said discharging path for discharging said stacked sheets of paper one by one upon contact during a sheet paper discharging mode; and

control means for changing the relative positional relation between said bottom plate and said discharging means such that the topmost sheet of said stack is located away from said discharging means during a sheet paper receiving mode and the topmost sheet of said stack is in contact with said discharging means during a sheet paper discharging mode.

4,379,550

GROUND SUPPORTED PLAYGROUND DEVICE

Tom L. Petersen, Fruens Böge, Denmark, assignor to Multikunst Legepladser I/S, Ringe, Denmark

Filed Jul. 9, 1979, Ser. No. 56,147
Int. Cl.³ A63G 17/00
U.S. Cl. 272—52 **1 Claim**

1. A playground device of the type carried on resilient means for support which, in use, is likely to be subjected to tilting or displacement forces, said resilient means for support being secured to base anchoring means for firmly anchoring the lower end of the resilient means for support to the ground, characterized in that said base anchoring means comprise a lightweight mounting member for holding the lower end of the resilient means for support generally in the ground surface level and provided with mutually spaced, downwardly protecting leg members which, at their respective lower ends, are secured in lightweight plate means which are mounted or mountable in a generally horizontal, subterranean position,

the mounting member is an inverted cup-shaped sheet metal member provided with holes in its depending edge flange for receiving fastening bolts for the upper ends of said leg members,

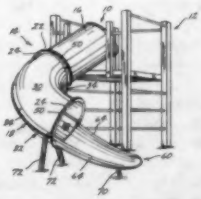
and underneath the top portion of the cup member there is arranged a cross member, the opposite end portions of which are spaced from the cup top portion by distance members secured to the cup top portion by means of bolts additionally serving to hold the lower end of the resilient means for support against the cup member top side, the central portion of the cross member being spaced from the underside of the cup top portion so as to define a space in which is received the upper, inwardly bent end portions of the leg members.

4,379,551

PLAYGROUND TUBE SLIDE

Paul W. Ahrens, Grinnell, Iowa, assignor to Miracle Recreation Equipment Company, Grinnell, Iowa

Filed Sep. 2, 1980, Ser. No. 183,049
Int. Cl.³ A63G 21/00
U.S. Cl. 272—56.5 R **7 Claims**



1. A playground tube slide comprising,

an elevated deck,

a bed extending from said deck to the ground,

said bed including a curved tube section having top and bottom half sections interconnected by fastening means engaging laterally outwardly extending flanges along the length of said top and bottom half sections of said curved tube section,

said bed including at least one other section which includes a laterally extending arcuate end flange connected to an adjacent laterally extending arcuate end flange on said curved tube section,

said curved tube section extending in one direction and being adapted to be turned in the opposite direction by rotating said curved tube section relative to said other section,

said half sections of said curved tube section being identical and each including said arcuate end flange at each end, and

the bottom section of said curved tube section including a series of shingled metal bed members overlaying the inside surface of said bottom section.

4,379,552

EXERCISING DEVICE

Ronald W. Webb, and Robert L. Morgan, both of Spokane, Wash., assignors to Rotator, Ltd., Spokane, Wash.

Filed Jun. 12, 1981, Ser. No. 273,053
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—67 **8 Claims**

1. A hand held device for exercising the muscles of the human arms and wrists, comprising:

a housing;

a first handle stationary on the housing, extending outwardly therefrom along a first axis, adapted to be grasped and held secure along with the housing by a user's hand with the first axis being transverse to the forearm thereof;

shaft means mounted to the housing for rotation thereon about a second axis oriented transversely in relation to the first axis;

a second handle mounted to the shaft means at an angular orientation to the second axis, to be grasped by the user's other hand so the forearm thereof is substantially aligned with the second axis and adapted to be turned about the second axis in one direction by the muscles associated with one wrist motion and in an opposite direction by the muscles associated with an opposite wrist motion; said second handle being mounted at an obtuse angle to the shaft means and wherein the second axis intersects the second handle between the ends thereof; and

adjustable restrictor means on the housing and engaging the shaft means for selectively resisting rotational motion of the shaft about the second axis relative to the first handle in response to movement of the second handle by the hand grasping the second handle.

4,379,553

BOWLING LANE WITH FIRE RETARDANT DECORATIVE SURFACE

Peter B. Kelly, Pasadena, Tex., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 59,215, Jul. 20, 1979, abandoned. This application Oct. 28, 1981, Ser. No. 315,972
Int. Cl.³ A63P *1/04*; B32B *17/02, 17/12, 21/10*
U.S. Cl. 273—51 **25 Claims**

1. In a bowling lane having a surface characterized by a falling ball impact resistance of at least 60 inches, a coefficient of friction of at least 0.16 and a Taber abrasion resistance of at least 500 cycles, said bowling lane comprised of a substrate selected from the group consisting of natural wood, consolidated wood fibers, plywood, flakewood, chipboard, and hardboard, and at least one decorative plastic laminate secured to the surface of said substrate, said plastic laminate comprising a plurality of thermosetting resin impregnated fibrous core sheets, a melamine resin impregnated decorative fibrous print sheet, and an overlying melamine resin containing protective layer, the improvement which comprises

said fibrous core sheets being comprised of sheets of glass and paper, said glass being selected from the group consisting of woven glass cloth, glass net and glass scrim, the interlaminar bond strength between said glass and paper sheets being sufficient to prevent delamination of said glass and paper sheets upon impact with a dropped bowling ball from heights up to about 4 feet, said glass also being impregnated with an organic fire retardant material and said paper sheets also being impregnated with an inorganic fire retardant material.

23. In a decorative plastic laminate of a length and width for securing to a substrate selected from the group consisting of natural wood, consolidated wood fibers, plywood, flakeboard, chipboard, and hardboard to form therewith all or part of a bowling lane having a surface characterized by a falling ball impact resistance of at least 60 inches, a coefficient of friction of about 0.16 and a Taber abrasion resistance of at least about 500 cycles, said plastic laminate sheet comprising a plurality of thermosetting resin impregnated fibrous core sheets, a melamine resin impregnated decorative fibrous print sheet, and an overlying melamine resin containing protective layer, the improvement which comprises:

said fibrous core sheets being comprised of sheets of glass and crepe paper, said glass being selected from the group consisting of woven glass cloth, glass net and glass scrim, said glass also being impregnated with an organic fire retardant material and said crepe paper also being impregnated with an inorganic fire retardant material.

25. The method of producing a bowling lane having a surface characterized by a falling ball impact resistance of at least 60 inches, a coefficient of friction of about 0.16 and a Taber abrasion resistance of at least about 500 cycles comprising:

impregnating a plurality of glass core sheets with a formulation comprised of a thermosetting resin and an organic fire retardant material;

impregnating a plurality of creped paper sheets with a formulation comprised of a thermosetting resin and an inorganic fire retardant;

laying said plurality of impregnated glass core sheets between said plurality of impregnated crepe paper core sheets in an alternative manner beginning with and ending with a crepe paper core sheet;

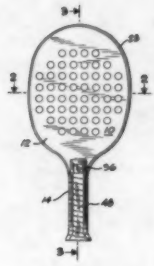
consolidating said impregnated core sheets, a resin impregnated decorative fibrous print sheet, and an overlying resin containing protective layer under heat and pressure to produce a unitary decorative plastic laminate sheet; and

securing at least one such plastic laminate sheet to a substrate selected from the group consisting of natural wood, consolidated wood fibers, plywood, flakeboard, chipboard and hardboard to produce the desired bowling lane.

4,379,554
PLATFORM TENNIS PADDLE

Andreas D. Schuyler, Wyckoff, and Richard K. Maier, Allendale, both of N.J., assignors to Skymar Corporation, Wyckoff, N.J.

Filed Aug. 24, 1981, Ser. No. 295,733
Int. Cl.[3] A63B 59/00
U.S. Cl. 273—67 R 3 Claims

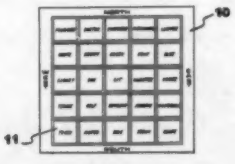


1. A platform tennis paddle comprising in combination:
a. a blade portion in turn comprising in combination;
(1) an inner laminated ply structure having uniform thickness defined by opposed substantially planar surfaces;
(2) a central aperture in said inner laminated ply structure;
(3) a pair of outer laminated ply structures having substantially planar surfaces, each one attached to one of said opposed substantially planar surfaces of said inner laminated ply structures;
(4) said blade portion including a plurality of holes being defined by said inner and outer ply structures;
(5) resilient plug means for insertion into said central aperture dimensioned to fit therewithin;
b. a handle portion in turn comprising in combination:
(1) a pair of half-handles attached to either side of said blade portion; (and)
(2) plurality of peg means for securing the ply structures to said half-handles;
(3) grip means for encasing said half-handles(.) ; and,
c. wherein said central aperture is less than 50 percent of the area of said blade portion.

4,379,555
PUZZLE-GAME

Carl J. Dean, RFD, Southbridge, Mass. 01550

Filed Sep. 19, 1980, Ser. No. 188,927
Int. Cl.[3] A63F 3/00
U.S. Cl. 273—236 1 Claim

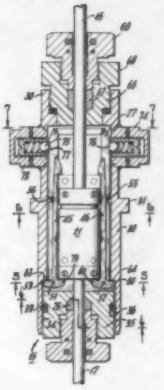


1. A puzzle game for one or more players comprising:
a planar surface having areas for representing a plurality of positions in adjacent rows;
a set of indicia-bearing elements for disposing at said positions to attempt to achieve a predetermined pattern of said indicia unknown to said player or players;
cue elements for providing a number of independent cues which taken together establish said predetermined pattern, each of said independent cues including a message of a relationship between two or more indicia and an indication of one or more positions in which said indicia may properly be disposed, said indication of one or more positions being a replica of said plurality of positions in adjacent rows with one or more of said positions marked to indicate positions in which said indicia may properly be disposed.

4,379,556
STRIPPING GLAND FOR MULTICABLES WITH CONNECTOR

Herbert A. Rundell, Houston, and Eugene B. Horton, Jr., Bellaire, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 14, 1982, Ser. No. 388,354
Int. Cl.[3] E21B 33/08; F16J 15/56
U.S. Cl. 277—12 13 Claims



1. A stripping gland for maintaining a pressure seal with multicables having a larger diameter connector joining pairs of said cables, comprising in combination
a packing gland for each of said cables,
a housing for said connector;
a latching holder for said housing,
said holder incorporating one of said packing glands, and
a receptacle for said latching holder having another of said packing glands associated therewith.

4,379,557
VALVE STEM PACKING STRUCTURE

Hamid J. Saka, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

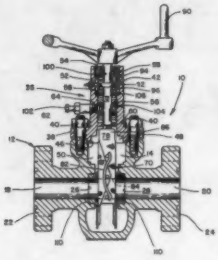
Filed Mar. 5, 1981, Ser. No. 240,700
Int. Cl.[3] F16J 15/18, 15/40
U.S. Cl. 277—59 12 Claims

1. A packing structure for a valve stem extending through a packing chamber in a valve housing having a flow passage therethrough wherein said packing chamber is provided with packing stops at the ends thereof, one of said packing stops being an inner packing stop located nearest to the flow passage of the valve and exposed to the fluid pressure of the flow passage of the valve, and the other packing stop being an outer packing stop located outward of the inner packing stop with respect to the flow passage, said packing structure comprising:
a low temperature packing assembly positioned within the packing chamber between the valve stem and valve housing in surrounding relation to said valve stem and resting on said inner packing stop, said low temperature packing assembly being in sealing contact with the stem and valve

housing at normal temperature conditions of the valve housing;

a rigid spacer member received about the valve stem and positioned within the packing chamber outwardly of said low temperature packing assembly and in engagement therewith; and

a high temperature packing assembly positioned within the packing chamber between the valve stem and valve housing in surrounding relation to said valve stem and located



outwardly of said spacer member so as to be sandwiched between said outer packing stop and said spacer member, said high temperature packing assembly being in sealing contact with the valve stem and valve housing at normal temperature conditions of the valve housing and at abnormally high temperature conditions of the valve housing which are destructive to said low temperature packing assembly so that the packing structure will not leak flow passage fluid when subjected to abnormally high temperatures.

4,379,558

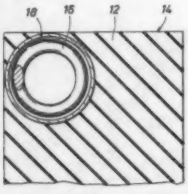
ANTI-EXTRUSION PACKING MEMBER

Fred B. Pippert, Houston, Tex., assignor to Utex Industries, Inc., Houston, Tex.

Filed May 1, 1981, Ser. No. 259,454

Int. Cl.³ F16J *15/18*

U.S. Cl. 277—188 A **6 Claims**



1. A packing comprising:

an extrudable body member having at least one sealing surface thereon; and

anti-extrusion means incorporated in said body member to form a reinforced portion of said body member; said anti-extrusion means serving to resist extrusion forces acting on said body member in the area contiguous to said reinforced portion, said anti-extrusion means being comprised of a flat helical spring with adjacent helical spring segments overlapping to form a tubular shell.

4,379,559

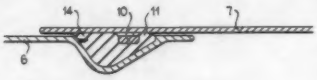
PIPE SEALING DEVICE

Nils-Erik Bohman, Forsheda, Sweden, assignor to Forsheda Gummifabrik AB, Forsheda, Sweden

Continuation of Ser. No. 53,701, Jun. 29, 1979, abandoned. This application May 20, 1981, Ser. No. 265,619

Int. Cl.³ F16L *19/00*

U.S. Cl. 277—207 A **3 Claims**



1. A pipe joint comprising, in combination,

an outer pipe having an annular groove therein and an inner pipe inserted within said outer pipe,

a sealing ring having a body portion of resilient material, said sealing ring positioned in the annular groove in said outer pipe and having a sealing portion adapted to sealingly engage said inner pipe introduced therein,

said sealing ring having a first radially inwardly extending projection having an annular conical entry surface to center the inner pipe as it is being inserted into the outer pipe and to remove any foreign matter which may be present from the outer surface of the inner pipe,

said sealing ring having a second radially inwardly extending projection forming said sealing portion and having an annular conical surface to provide an elongated deformation length which serves as a sealing area with respect to the inner pipe when the inner and outer pipes are assembled,

an annular groove provided in the body portion between the first and second projections,

an annular retainer ring positioned in the annular groove of the body portion for retaining the sealing ring in the annular groove in the outer pipe,

said first projection being deformed by the inner pipe inserted into the outer pipe to engage the inner surface of the retainer ring and being compressed between said retainer ring and inner pipe to provide force on said retainer ring so that the body portion of said sealing device is securely maintained in the annular groove of the outer pipe, and

said second projection being folded radially outwardly as the inner pipe is inserted to form a seal between the inner and outer pipe.

4,379,560

TURBINE SEAL

Gordon J. Bakken, Plymouth, Mass., assignor to Fern Engineering, Bourne, Mass.

Filed Aug. 13, 1981, Ser. No. 292,688

Int. Cl.³ F01D *11/00*; F02C *07/28*

U.S. Cl. 277—236 **3 Claims**

1. Turbine seal, comprising:

(a) an outer tubular element,

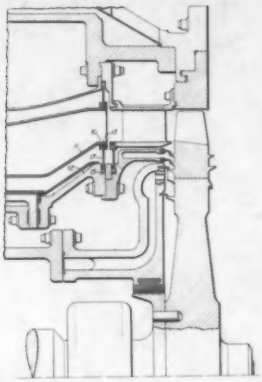
(b) an inner tubular element, the elements being concentric and radially spaced,

(c) a first ring joined to the outer tubular element, the ring having an inwardly-directed groove,

(d) a second ring joined to the inner tubular element, the ring having an outwardly-directed groove, each groove of the first and second rings being with spaced, parallel radial surfaces, and

(e) a junction element in the form of a washer having an outer peripheral edge lying in the inwardly-directed groove and an inner peripheral edge lying in the outwardly-directed groove, the edge of the junction element lying

in each groove having an annular enlargement of circular cross-section that fits snugly between the radial surfaces,



the grooves in the first and second rings having a depth in the radial direction that is at least greater than the minor diameter of the enlargement.

4,379,561

WELL PACKER

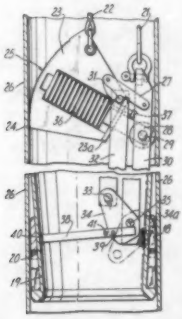
Hugh D. Nelson, Sydney, Australia, assignor to Mono Pumps Limited, Manchester, England

Filed Jan. 28, 1982, Ser. No. 343,568

Claims priority, application United Kingdom, Jan. 29, 1981, 8102742

Int. Cl.³ E21B *23/00, 43/00*

U.S. Cl. 277—237 R **20 Claims**



1. A well packer comprising: a packer sleeve means; means defining a tapered external surface portion of said packer sleeve; expansible annular collet means; means defining an internal surface to said collet means of a taper able to cooperate with that of the external tapered surface portion of the packer sleeve means; means defining an external surface of said collet means capable of frictionally engaging a well casing pipe having a diameter larger than the external diameter of the packer sleeve means; said expansible collet means being resiliently deformable from a relaxed first configuration in which it has a first diameter to a second configuration in which it has a diameter smaller than said first diameter and it engages the tapered external surface portion of the packer sleeve means; collet-holding means for holding said collet means in said second configuration while engaged around the tapered external surface portion of the packer sleeve means; and collet release means operable from a remote location to release said collet means from its said second configuration to spring radially outwardly towards its said first configuration.

4,379,562

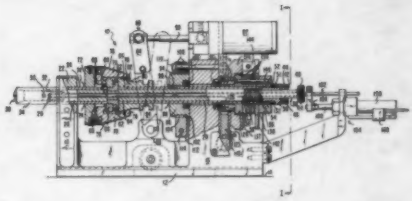
INDEXING APPARATUS

Carlos J. Corbacho, Newark, N.J., assignor to Joyal Products, Inc., Linden, N.J.

Filed Jan. 5, 1981, Ser. No. 222,558

Int. Cl.³ B23Q *3/08*

U.S. Cl. 279—5 **9 Claims**



1. Indexing apparatus, comprising rotating means for incrementally rotating a workpiece to be indexed, said rotating means including a first end, a second end, a first tubular member, a second tubular member mounted for reciprocating and rotating movement within said first tubular member, gripping means threadedly attached to said second tubular member at said first end of said rotating means and keyed to said first tubular member such that said gripping means is free to move axially relative to said first tubular member but is prevented from rotating relative to said first tublar member, said gripping means being movable in response to the axial position of said second tubular member relative to said first tubular member between a first position in which said gripping means grips the workpiece to be indexed and a second position in which said gripping means releases a workpiece after it has been indexed, locking means for releasably locking said first tublar member to said second tubular member such that said second tubular member is rotatable conjointly with said first tubular member, and determining means for determining the increments of rotation of said rotating means, said determining means being removably positioned adjacent to said second end of said rotating means to facilitate the removal of said determining means for replacement purposes; moving means positioned between said gripping means and said determining means for moving said gripping means between said first position and said second position in response to the axial position of said second tubular member relative to said first tubular member, said moving means including reciprocating means for axially reciprocating said second tubular member within said first tubular member and connecting means for connecting said reciprocating means to said second tubular member such that said second tubular member is rotatable about its longitudinal axis relative to said first tubular member when said second tubular member is not locked to said first tubular member, whereby said second tubular member can be rotated relative to said first tubular member and hence said gripping means when said second tubular member is not locked to said first tubular member to thereby threadedly detach said gripping means from said second tubular member for replacement purposes.

4,379,563

AUXILIARY ICE SKATE BLADE

Serge Arsenault, 1700 Longueuil, St. Bruno, Quebec, Canada

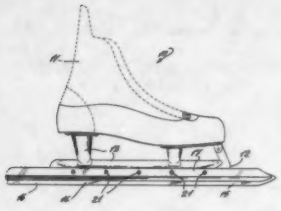
Filed Mar. 24, 1981, Ser. No. 247,125

Int. Cl.³ A63C *3/00*

U.S. Cl. 280—7.1 **7 Claims**

1. An auxiliary ice skate blade for attachment to a skate blade secured to a skate boot, said auxiliary skate blade comprising a rigid blade support member having a lower blade retention

slot, a narrow elongated blade having an ice contacting edge portion and a securable upper end portion retained in said retention slot, and attachment means in said support member



for detachable securement of said support member to a skate blade secured to a boot whereby said skate blade and elongated blade are in axial planar alignment.

4,379,564

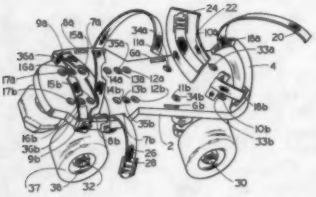
ROLLER SKATE

John J. Welker, 1904 LaFontenay Ct., Louisville, Ky. 40223

Continuation of Ser. No. 75,699, Sep. 14, 1979, abandoned. This application Jan. 7, 1982, Ser. No. 337,630

Int. Cl.³ A63C *17/14*

U.S. Cl. 280—11.2 **7 Claims**



1. A roller skate comprising:

a foot-plate member with a toe portion and a heel portion having at least two pairs of slots in said toe portion thereof, each pair of slots being aligned and on opposite sides of said member receiving a first adjustable belt therethrough, said member including means on said heel portion receiving a second adjustable belt therethrough; and,

a first front pair of aligned spaced rollers rotatively mounted to a first axle of a first truck assembly including a support portion centrally disposed of said first axle and extending transversely from the underside of said toe portion of said member and a second rear pair of aligned spaced rollers rotatively mounted to a second axle of a second truck assembly, said second truck assembly including a support portion centrally disposed of said second axle and extending transversely from the underside of said heel portion of said member, spacing between rollers of said first pair of spaced rollers is less than the spacing between rollers of said second pair of rollers, the center of the tread of each of said rollers of said first pair of rollers being in substantially longitudinal alignment with the inside edge of each of said rollers of said second pair of rollers which are on the same side of said member, said first pair of rollers and said second pair of rollers being of substantially the same size and diameter whereby the first and second axles swing in use in opposite directions to enable steering of said roller skate by tilting of the foot plate member.

4,379,565

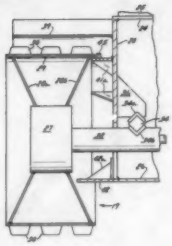
NONFOULING WHEEL HOUSING FOR COMPACTION VEHICLE

Charles F. Riddle, Brookfield, Wis., assignor to Rexworks Inc., Milwaukee, Wis.

Filed Jul. 20, 1981, Ser. No. 285,202

Int. Cl.³ B60R *19/00*

U.S. Cl. 280—160 **10 Claims**



1. In a vehicle for compacting sanitary landfill refuse and the like including paired, opposite cleated drum wheels spaced from the respective side walls of the vehicle housing, said walls extending downward to the projected underside of the vehicle, wheel closure means between each side wall and wheel comprising a partial cylinder extending from the wall to the periphery of the wheel drum which is above the projected underside of the vehicle, and a flat plate fixed to and extending from the vehicle underside to the inner wheel face and joined to the lower margins of said fixed partial cylinder, the minimum operating clearance which is required to be provided between said fixed cylinder and wheel drum being located a substantial distance from the side wall such that refuse is unlikely to be drawn into said clearance and, for example, wrapped around the axle housing.

4,379,566

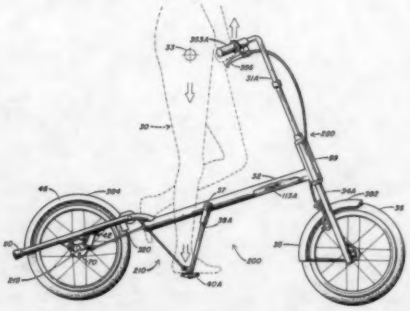
OPERATOR POWERED VEHICLE

Steven E. Titcomb, Stoneham, Mass., assignor to Creative Motion Industries, Inc., Danvers, Mass.

Filed Jan. 26, 1981, Ser. No. 228,264

Int. Cl.³ B62K *21/18*; B62M *1/04*

U.S. Cl. 280—251 **38 Claims**



1. An operator powered vehicle comprising:

a. a vehicle frame;

b. a drive-wheel assembly including drive hub, a drive wheel rotatably mounted on said frame, and coupling means including a unidirectional clutch coupling said hub to said drive wheel to prevent relative forward rotation of said hub with respect to said drive wheel but permit relative

forward rotation of said drive wheel with respect to said hub;

c. a force-reception element mounted on said frame for reciprocation from a rest position thereof to other position thereof;

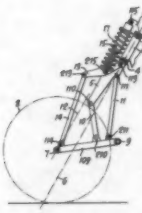
d. a cable attached to said force-reception element and trained in a path for travel upon movement of said force-reception element, said cable being coupled to said hub to permit rotation of said hub without travel of said cable when said force-reception element is in its rest position but to constrain said hub, while said force-reception element is in at least a drive portion of its other positions, to rotate in the forward direction upon travel of said force-reception element away from said rest position thereof, propulsion of said vehicle forward thereby being possible by reciprocation if said force-reception element, but rearward movement of said vehicle being possible without travel of said cable when said force-reception element is in its rest position.

4,379,567

FRONT SUSPENSION SYSTEM FOR A MOTORCYCLE

Valentino Ribi, Genoa, Italy, assignor to Honda Giken Kogyo Kabushiki Kaisha, Asaka, Japan

Filed Nov. 19, 1980, Ser. No. 208,373
Claims priority, application Italy, Nov. 22, 1979, 12835 A/79
Int. Cl.³ B62K *21/02*
U.S. Cl. 280—276 **11 Claims**



1. A front suspension wheel system for a motorcycle wheel, comprising

(a) a downwardly and forwardly inclined suspension structure mounted on the steering column;

(b) two swinging arms pivoted at one end to said suspension structure and at the other end to a wheel-carrying element so that said suspension structure, said two swinging arms and said wheel-carrying element form an articulated quadrilateral;

(c) resilient means acting on said articulated quadrilateral to oppose relative movement between said suspension structure and said wheel-carrying element due to a load applied to the motorcycle;

(d) a swinging lever having one part fulcrumed to said suspension structure, and another part connected to said resilient means and to a downwardly extending connecting rod;

(e) a prolongation on said wheel-carrying element extending forwardly beyond the pivot points between said two swinging arms and said wheel-carrying element, and adapted for mounting a motorcycle wheel;

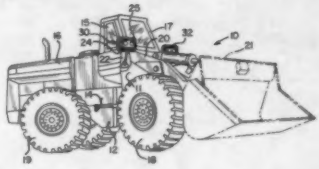
(f) said articulated quadrilateral being located rearwardly of said suspension structure and said resilient means being mounted on a forward portion of said suspension structure and being connected to one of (1) said two swinging arms and (2) said wheel-carrying element, through said connecting rod.

4,379,568

ARTICULATED TRACTOR LOADER WITH SIDE REAR VIEW MIRRORS

Thomas W. Kerkman, Salem, Wis., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 17, 1980, Ser. No. 207,105
Int. Cl.³ B62D *63/04*
U.S. Cl. 280—400 **4 Claims**



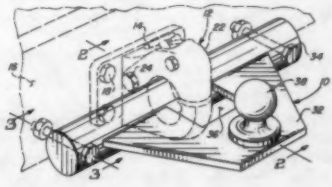
1. In an articulated tractor loader comprising a front frame section supported on front rubber tired wheels and supporting an operator's cab, a rear frame section hingedly connected to the front frame section and supported on rear rubber tired wheels and supporting a power plant, said front wheels and said rear wheels being disposed outboard of their respective frame sections, a pair of right and left boom arms mounted on transverse pivots on opposite sides of the front frame section forwardly of the operator's cab, a pair of right and left support standards fixedly mounted to the sides of the front frame section and supporting a pair of right and left headlight housings forwardly of the cab and above the boom arm pivots outboard of the front frame section, and a pair of right and left side rear view convex mirrors mounted to the headlight housings providing a panoramic rearward and downward view looking from the operator's cab, said view including at least the sides of the tractor loader vehicle rearwardly of the front wheels, the ground area between said front and rear wheels, and a ground area rearwardly of the rear wheels.

4,379,569

TRAILER HITCH ADAPTOR

Richard L. Koch, 314 E. Rovey Ave., Phoenix, Ariz. 85012

Filed Jul. 30, 1981, Ser. No. 288,518
Int. Cl.³ B60D *1/06*
U.S. Cl. 280—415 A **3 Claims**



1. A hitch adaptor for use in combination with a pintle hook that is mounted to a towing vehicle to convert the pintle hook hitch into a ball-and-socket type, the pintle hook hitch including a hook and closure member that form an eyelet when mated, the hitch adaptor including a cylindrical bar that is closely received through the eyelet, the improvement comprising:

the bar extending beyond the width of the pintle hook hitch;

a base plate mounted along the length of the bar and extending directly therefrom having a first aperture formed centrally therein to accommodate the hook and closure member and a second aperture formed near the rear portion of said base plate to receive a ball member; and

mounting means disposed at each end of the bar for affixing

the hitch adaptor to the towing vehicle while providing stability and preventing rotation of the hitch adaptor about the pintle hook hitch.

4,379,570

SKI STOPPER

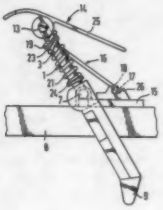
Gerhard Sedlmair, Farchant, Fed. Rep. of Germany, assignor to Marker-Patentverwertungsgesellschaft mbH., Baar, Switzerland

Filed May 22, 1980, Ser. No. 152,193

Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2920981

Int. Cl.³ A63C *7/10*

U.S. Cl. 280—605 **6 Claims**



2. A ski brake mountable on a ski for impeding the movement of a ski down a slope when the ski is detached from a skier's boot, said ski brake comprising:

first and second braking spurs, said first braking spur being on the opposing side of the ski from said second braking spur;

a pivot pin having an axis; said braking spurs being moveable about said axis of said pivot pin between a non-braking skiing position and a braking position;

a base plate fixed to said ski, said base plate pivotally connecting said pivot pin to said ski;

an arm attached to said pivot pin, said arm operable by a ski boot for moving said braking spurs from said braking position to said non-braking position when said boot engages said arm;

spring biassing means on said arm for biassing said braking spurs to said braking position when said ski is detached from a skier's boot;

coupling means for coupling said spring biassing means to said ski; and

connecting means spaced from said pivot pin axis for releasably connecting said coupling means to said ski, said coupling means being deliberately releasable from said connecting means to disable said spring biassing means.

4,379,571

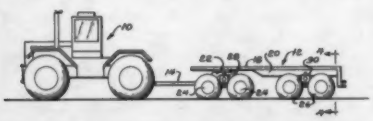
TRAILER WITH ADJUSTABLE WHEELS

Lovel R. Simmons, P.O. Box 1206, Jackson, Miss. 39205

Continuation of Ser. No. 925,308, Jul. 17, 1978, abandoned. This application Feb. 6, 1980, Ser. No. 119,094

Int. Cl.³ B62D *61/10*

U.S. Cl. 280—656 **2 Claims**



1. A load carrying machine comprising structure of substantially rectangular outline having a front end and a back end for receiving and supporting a load, a plurality of wheels comprising at least two sets of wheels, each set comprising at least four wheels arranged as two tandem pairs, the pairs of each set being axially spaced transversely of said machine, one set of which is adjacent the front end and one set of which is adjacent the rear end of said load supporting structure, the wheels of each tandem pair being respectively adjacent opposite sides of said structure, said front set of wheels being mounted from said machine for pivoting about a substantially vertical axis, means interconnecting said wheels and said structure for moving axially spaced tandem pairs of said wheels of each set toward and away from one another axially of such wheels, and means for moving all of said wheels up and down relative to said supporting structure to vary the height of said supporting structure, the underside of said structure adjacent the front thereof being substantially flat to permit said front set of wheels to pivot with said wheels in axially extended relation, the wheels of each tandem pair respectively being mounted on tandem pairs of pivot arms, each tandem pair of pivot arms being pivoted on a common member, each such member being mounted from said structure for rocking about a respective axis transverse of said machine, said pivot arms being pivoted on said member relatively adjacent the upper portion of said member and diverging downwardly therefrom respectively in fore and aft directions, and wherein the means for moving up-and-down comprises means acting between pairs of pivot arms to effect pivoting thereof to raise or lower the wheels relative to said supporting structure, said arms having portions thereof abuttable with lower portions of a respective common member to serve as stops for said arms to limit lowering of said wheels.

4,379,572

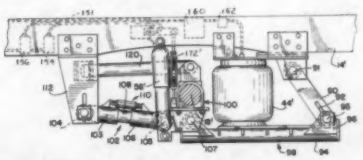
UNIVERSAL AIR SUSPENSION SYSTEM

William E. Hedenberg, 490 Buffalo Grove, Buffalo Grove, Ill. 60090

Filed May 12, 1980, Ser. No. 149,008

Int. Cl.³ B60G *11/26*

U.S. Cl. 280—711 **2 Claims**



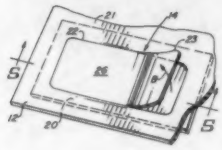
1. An air suspension system for a vehicle, said vehicle having a frame, a front axle, at least one rear axle and wheels mounted near opposite ends of said rear axle, said air suspension system being mounted adjacent each wheel on said rear axle to support at least that portion of the load of said vehicle applied through said frame to said axle and to absorb forces imparted to each wheel and said axle during movement of said vehicle, said air suspension system including carrier arm means having a pivotal link means at the rear end thereof, one end of said pixotal link means being pivotally connected to said frame, and a mounting platform portion, said mounting platform portion being pivotally connected to the other end of said pivotal link means, said carrier arm means being connected to said axle by an axle hanger assembly being fixedly attached to said mounting platform portion of said carrier arm means at a lower portion thereof, said air suspension system including means to adjust the alignment of said axle after mounting of said air suspension, said means to adjust alignment being pivotally connected between the forward end of said carrier arm means and said frame, and an air spring disposed on said mounting platform portion of said carrier arm means between said pivotal link means and said axle hanger assembly and interposed between said mounting platform portion and said frame.

4,379,573

BUSINESS FORM WITH REMOVABLE LABEL AND METHOD FOR PRODUCING THE SAME

Ronald C. Lomeli, and Gary E. Stewart, both of Phoenix, Ariz., assignors to Trade Printers, Inc., Phoenix, Ariz.

Filed Oct. 9, 1980, Ser. No. 188,502
Int. Cl.³ G09F 3/04
U.S. Cl. 428—42 1 Claim



1. A business form having a die cut label area removable therefrom, said form including

(a) a sheet of paper having a back side, an imprinted front side and an outer peripheral edge;

(b) at least one piece of transfer tape including a layer of adhesive adjacent a layer of backing material and having an outer peripheral edge, said tape being secured to a limited area on the back of said paper sheet by contacting said sheet with said layer of adhesive such that the outer peripheral edge of said piece of transfer tape generally lies within said outer peripheral edge of said paper sheet; and

(c) a label area die cut in said sheet of paper above said piece of transfer tape and having an outer peripheral edge,

(i) the outer peripheral edge of said die cut label generally lying within the outer peripheral edge of said transfer tape,

(ii) a portion of said business form lying between the peripheral edge of said die cut label and the peripheral edge of said transfer tape and including a first portion of said layer of adhesive sandwiched between a section of said sheet of paper and a section of the layer of backing material of said transfer tape, and

(iii) a second portion of said layer of adhesive lying between said label and said layer of backing material of said transfer tape, and

adhering to said label and separating from said backing material when said label is peeled away from said backing material, and

said transfer tape being sized such that said first portion of adhesive in said portion of said business form between the peripheral edge of said die cut label and the peripheral edge of said transfer tape is sufficient to maintain said transfer tape in position on said paper sheet when said label is peeled from said backing material of said transfer tape.

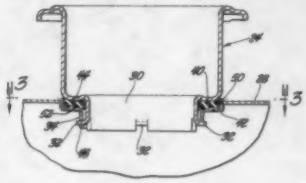
4,379,574

RADIATOR ASSEMBLY (BAYONET LOCK)

Ludwig Leichtl, Troy, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Dec. 22, 1980, Ser. No. 218,836
Int. Cl.³ F16L 5/02
U.S. Cl. 285—211 5 Claims

1. A tank assembly of the type utilized in a heat exchanger such as a radiator, said assembly comprising; a tank wall having an opening, a cylindrical spout extending from said opening in said tank wall, said spout having a lower portion extending into said opening, said lower portion having at least two radially extending tabs, said opening having a skirt extending inwardly from said tank wall, said skirt having at least two cam/lock sections with each cam/lock section including a cam surface leading from a receiving end to a locking recess, said cam surface increasing in distance from said tank wall in the direction from said receiving end thereof to said locking recess, said spout and said tank wall having radially extending overlying portions, and sealing means disposed between said overlying portions, said tabs being disposed in said locking recesses to compress said sealing means between said overlying portions and retaining said spout in said opening, said overlying portion of said tank wall defining an annular seal recess to define an annular shoulder for radially retaining said sealing



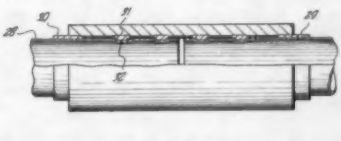
means in said recess, said spout including an upper cylindrical portion of a greater diameter than said lower portion thereof, said overlying portion of said spout comprising a radially extending shoulder integrally interconnecting said upper and lower portions, the outer diameter of said upper portion of said spout being no greater than the diameter of said annular shoulder of said seal recess.

4,379,575

COMPOSITE COUPLING

Charles L. Martin, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 118,867, Feb. 6, 1980, which is a continuation of Ser. No. 608,209, Aug. 27, 1975, abandoned, which is a continuation-in-part of Ser. No. 404,723, Oct. 9, 1973, abandoned, and a continuation-in-part of Ser. No. 404,724, Oct. 9, 1973, abandoned. This application May 15, 1981, Ser. No. 263,993
Int. Cl.³ F16L 17/02
U.S. Cl. 285—369 5 Claims



1. A composite coupling for joining cylindrical substrates which comprises:

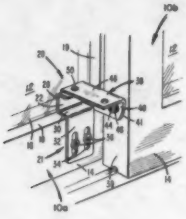
(a) a tubular heat recoverable compression sleeve made of a memory metal that recovers when heated above its transition temperature; and

(b) a tubular metallic insert snuggly and concentrically disposed within the sleeve, the insert having an interior principal surface adjacent to the substrates when said substrates are inserted into the coupling and an exterior principal surface adjacent to the sleeve, each principal surface including a plurality of axially spaced apart radial teeth, the teeth being aligned pairwise, one over the other, each tooth on the exterior principal surface of the insert having a width greater than the width of its aligned tooth on the interior principal surface for maximum transmission of recovery forces to the substrates, the insert being capable of forming a secure and gas-tight connection between said substrates when said sleeve is heated above its transition temperature.

4,379,576
SLIDING CLOSURE SECURITY SYSTEM

LeVone A. Blough, 4437 Mumford Dr., Hoffmann Estates, Ill. 60195, and David L. Gregory, 10207 Union Park Dr., Orlando, Fla. 32817

Filed Oct. 9, 1980, Ser. No. 195,617
Int. Cl.³ E05C 3/04
U.S. Cl. 292—205 15 Claims



1. A locking system for securing sliding closures which move within tracks and wherein at least one of the sliding closures comprises a glass patio door formed of a glass pane and a frame mounting the pane to form a recess defined by the pane and peripheral edge surfaces of the frame bounding said pane, comprising:

locking means attached to the closures for preventing relative movement therebetween when in an operative configuration and for allowing relative movement between the sliding closures when in an inoperative configuration, the locking means comprising a stationary locking element mounted to a face of one of the closures and a pivotable stop element mounted to a leading edge of the other closure, the stop element being pivotable to a blocking relationship with the stationary locking element to prevent movement between the closures, the stationary locking element further comprising a U-shaped portion and a flange portion extending vertically from a first leg of the U-shaped portion when the stationary locking element is disposed with the longitudinal axis thereof in a vertical orientation, the U-shaped portion fitting into the recess contiguous to lower horizontal peripheral edge surfaces of the frame and being spaced from vertical peripheral edge surfaces of the frame, and means for mounting the stationary mounting element to the frame; and,

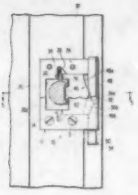
blocking means disposed upon upper horizontal frame surfaces of the closures between said closures and the tracks for preventing the closures from being lifted out of the tracks.

4,379,577
LATCH BOLT STRIKE LOCK

Gene V. Robertson, 1906 Esther Dr., Carlisle, Pa. 17013

Filed Jul. 28, 1980, Ser. No. 172,691
Int. Cl.³ E05C 13/02
U.S. Cl. 292—341.15 11 Claims

1. A latch bolt strike lock comprised of a door jamb, said door jamb having a recessed portion, a door lock mounted in a door, said door lock having a lock bolt, said lock bolt having a flat face, having a bolt locking recess in said flat face, being movable between extended and retracted positions, and engaging said recessed portion of said door jamb when said door is closed and said lock bolt is in the extended position, there not being any holes, openings or grooves in the rim of said recess, a door striker plate attached to said door jamb and having an opening therein corresponding to said recessed portion of said door jamb to allow entry of said lock bolt, and a locking plate attached to or mounted in or on said striker plate so as to be reciprocal between a first position wherein said locking plate does not engage said bolt locking recess in said lock bolt and a second position wherein said locking plate engages said bolt locking recess in said lock bolt to thereby prevent undesired retraction of said lock bolt, said door striker plate being ⊔-shaped, and said locking plate being slidably mounted within a

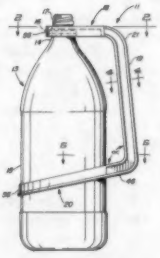


⊔-shaped spacer plate, said ⊔-shaped spacer plate being mounted within said striker plate.

4,379,578
REUSABLE BOTTLE HOLDER

Heriberto Schuler, P.O. Box 1553, Casselberry, Fla. 32707

Continuation-in-part of Ser. No. 126,455, Mar. 3, 1980, abandoned. This application Mar. 20, 1981, Ser. No. 246,084
Int. Cl.³ B65D 23/10
U.S. Cl. 294—31.2 5 Claims



1. A reusable bottle holder adapted to be used with a necked bottle having a neck flange comprising:

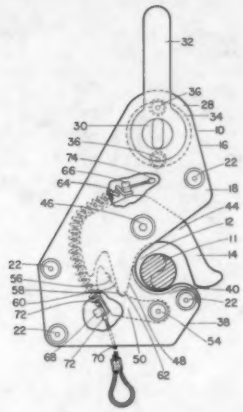
a handle member; and

means connected to the handle member for securing the neck of the bottle having a top member having an aperture with a width greater than the width of the neck of the bottle immediately above the neck flange; a side wall connected to the perimeter of said top member having a width greater than the width of the neck flange; and a bottom member connected to the side wall, and having a semi-annular first section with a central angle greater than one hundred eighty degrees (180°) and terminating in a pair of projections disposed a distance less than the diameter of the neck of the bottle immediately below the flange, from each other, and an angular section gently sloping from the respective projections to the side wall, said semi-annular first section having a radius which is approximately the same as the radius of the neck of the bottle immediately below the neck flange.

4,379,579
AUTOMATIC LOCKING AND EJECTING HOOK ASSEMBLY

Richard S. Mahan, Cuyahoga Falls; Paul G. Tritt, Norton, both of Ohio, and James H. Ward, Jr., Plymouth, N.C., assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 16, 1981, Ser. No. 331,120
Int. Cl.³ B66C 1/38; A44B 13/00
U.S. Cl. 294—83 R 9 Claims



1. An automatic hook assembly for locking a ring in a hook load retaining eye when loaded and ejecting the ring from the eye upon release of the load comprising a hook body having a hook portion, a hook supporting portion spaced from said hook portion, a locking and ejecting cam pivotally mounted on said hook body between said hook portion and said supporting portion, said cam having a locking jaw movable into a locking position at said load retaining eye, a releasable latch pivotally mounted on said body, said latch being engageable with said cam to lock said jaw in said locking position, an actuating member connected to said latch for arming said hook assembly by rotating said latch out of engagement with said cam, said cam having an ejecting surface for engagement with said ring, resilient means connected to said releasable latch and to said cam for yieldingly urging said cam in a direction to maintain said releasable latch in said locking position prior to arming of said assembly and in the same direction after arming to move said hook jaw out of said locking position and press said cam ejecting surface against said ring for ejecting said ring upon release of loading pressure by said hook on said hook portion of said body.

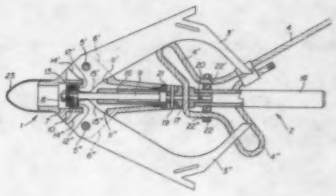
4,379,580
GRAPNEL

Jackie Staempfli, Geneva, Switzerland, assignor to Valinor, S.A., Vaduz, Liechtenstein

Filed May 14, 1981, Ser. No. 263,734
Claims priority, application Switzerland, May 22, 1980, 4004/80
Int. Cl.³ B66C 1/10; F42B 13/56
U.S. Cl. 294—86 R 8 Claims

1. A grapnel comprising a substantially rod-shaped body, a plurality of grapnel arms and means for attaching a rope, said body comprising at least first and second body parts in longitudinally movable relationship with each other, said grapnel arms being pivotably mounted on said first body part and adapted for pivoting between a retracted position close to the body and a position in which they are outwardly extending from said body, each arm comprising a cam-shaped portion adapted to co-operate with an actuating piston coupled to said second body part so as to urge said arms into the outwardly extending position when said second body part is longitudinally moved with respect to said first body part by a traction on the rope, and

wherein said second body part comprises a guiding rod for launching the grapnel along a ballistic trajectory by means of a launching tube, said guiding rod forming the tail portion of said body, said means for attaching a rope

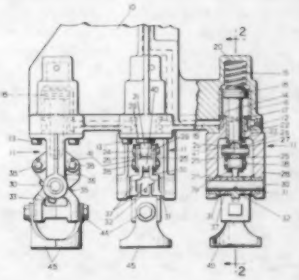


comprising means for retaining a first end of at least one loop of said rope on said second body part near the forward end of said guiding rod and comprising a movable attaching member slidably mounted on said guiding rod and retaining a second end of said loop of the rope, so as to retain the rope in the stretched condition thereof near the free end of said guiding rod.

4,379,581
TAKE-OUT TONG ASSEMBLY

Jack I. Perry, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 14, 1980, Ser. No. 206,765
Int. Cl.³ B66C 1/42, 1/28
U.S. Cl. 294—115 4 Claims



1. In glassware take-out mechanism wherein a pair of opposed tongs are moved into operative relationship with respect to the neck or finish of a glass container and closed about the neck for lifting the container by the neck and transferring the container to a machine dead plate, the improvement in the tong operating mechanism comprising:

a cylinder housing;

a piston positioned in said cylinder housing having a rod extending vertically downward therefrom;

a bifurcated hanger assembly extending generally parallel to said piston rod and at either side thereof;

a shaft extending between the lower ends of said hanger assembly;

a pair of tong holders mounted on said shaft and pivotally supported with respect to the axis of said shaft;

a compression spring biasing said piston in a downward direction into its lowermost positions;

at least a pair of equal length links pivotally connected to and extending from the lower end of said piston rod to the

upper ends of said tong holders respectively, said links describing a straight line when the piston rod is in its fully extended, lowermost position.

4,379,582

DEVICE FOR IMPROVING AERODYNAMIC AND SAFETY CHARACTERISTICS OF AUTOMOTIVE VEHICLES

Tsutomu Miwa, 3010-8, Sayamagaoka, 1-Chome, Tokorozawa-shi, Saitama 359, Japan

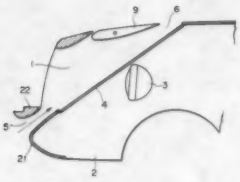
PCT No. PCT/JP80/00020, § 371 Date Oct. 7, 1980, § 102(e) Date Oct. 7, 1980, PCT Pub. No. WO80/01672, PCT Pub. Date Aug. 21, 1980

PCT Filed Feb. 9, 1980, Ser. No. 194,831

Claims priority, application Japan, Feb. 9, 1979, 54-014920; Feb. 14, 1979, 54-016774

Int. Cl.³ B62D *35/00*

U.S. Cl. 296—1 S **6 Claims**



1. A device for improving the aerodynamic and safety characteristics of an automotive vehicle, comprising an impact absorbing member defining an air induction passage extending longitudinally of the vehicle for directing air upwardly and rearwardly of the vehicle from a point forward thereof and through a passage outlet during vehicle movement, and an anti-lift member formed of a material being mounted in said air induction passage, said anti-lift member having a trailing edge positioned higher than a leading edge thereof, said impact absorbing member and anti-lift member being located below the level of a vehicle hood.

4,379,583

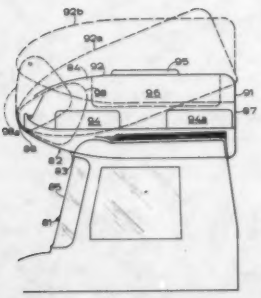
VEHICLE CABS HAVING AIRFLOW DEFLECTORS ON THEIR ROOFS

Merrick W. Taylor; George R. Allen, both of Warwickshire, and Terence Strong, Coventry, all of England, assignors to Motor Panels (Coventry) Limited, Coventry, England

Filed Feb. 4, 1981, Ser. No. 231,391

Int. Cl.³ B62D *35/00, 33/06*

U.S. Cl. 296—1 S **9 Claims**



1. A vehicle cab in which is a driver's seat and which has an airflow deflector on a roof thereof of generally plate form extending over substantially the same width as the cab, pivotal connecting means between said deflector adjacent a front edge thereof and a front upper portion of the cab whereby said deflector can be swung about a horizontal axis between raised and lowered positions relative to the cab, side walls and a rear wall extensibly connected between said deflector and the cab, means for swinging said deflector upwardly about said pivotal connecting means and means to retain said deflector in a raised position at which said deflector and said side and rear walls define a compartment above the cab, an opening in the roof of the cab providing access to said compartment from the cab, and a bunk extending transversely of the cab in an elevated position within the envelope defined by the cab and said compartment and substantially directly above said driver's seat, said bunk being accessible by way of said opening when said deflector is in a raised position.

4,379,584

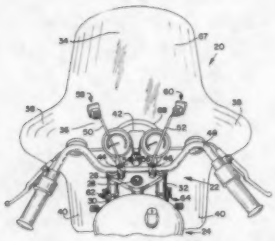
MOTORCYCLE SAFETY WINDSHIELDS

Barry A. Willey, 138 S. 8th Ave., Maywood, Ill. 60153

Filed Mar. 6, 1981, Ser. No. 241,434

Int. Cl.³ B62J *17/04*

U.S. Cl. 296—78.1 **27 Claims**



1. A cycle windshield assembly comprising, in combination, a wind deflector shield unit and a shield mounting portion, said shield unit having front and rear surfaces and a generally transparent first portion adapted to be seen through by the rider of an associated cycle and a second portion adapted to receive mounting braces, at least one pair of spaced apart mounting pad units, each of said pad units having a body portion and a front surface portion with a contour corresponding to the contour of said rear surface of said second portion of said shield unit, said mounting pad front surface portion being adhesively bonded to said rear shield surface, said mounting pad body portion being adapted to receive mounting braces which are in turn adapted to be fixedly received in use with respect to a forward portion of an associated cycle.

4,379,585

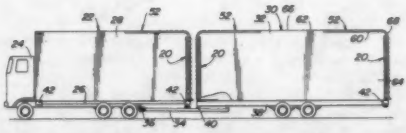
EXTERNAL DOOR FOR VEHICLES

Leonard Strick, 2401 Pennsylvania Ave., Philadelphia, Pa. 19130

Filed Apr. 27, 1981, Ser. No. 258,148

Int. Cl.³ B60J *5/12*

U.S. Cl. 296—146 **17 Claims**



1. In a vehicle body for holding cargo therein having a first end, a pair of opposed sidewalls and a roof, said first end including an opening communicating with the interior of said

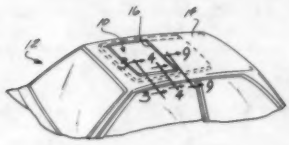
body, the improvement comprising an externally disposed sliding door assembly, said door assembly including sliding door means movable from a stored position above said roof to a pivoted open position wherein said door means covers said opening but is pivoted outward from said opening about a pivot axis located adjacent the bottom of said opening, said door being pivotable to a pivoted closed position wherein said door is pivoted toward said opening to fully close said opening.

4,379,586

SLIDING ROOF PANEL ASSEMBLY

Milton C. Kaltz, Allen Park; Edward M. Chojnowski, Northville; David C. Garascia, Novi; Barney J. Bauer, Howell, and Richard D. George, Brownstown, all of Mich., assignors to American Sunroof Corporation, Southgate, Mich.

Filed Oct. 14, 1980, Ser. No. 196,468
Int. Cl.³ B60J 7/04
U.S. Cl. 296—222 **27 Claims**



1. A modular sliding roof panel assembly adapted to be mounted to the stationary roof structure of a vehicle having an opening in the roof thereof which is opened and closed by the sliding roof panel, said assembly comprising:

an integral housing adapted to be mounted to the interior of said stationary roof structure of said vehicle, said housing having an aperture therein aligned with said opening in said roof of said vehicle;

a movable roof panel;

guide rails mounted to said housing and extending in the sliding direction of said movable roof panel;

front and rear guide shoes mounted to said movable roof panel and engaging said guide rails for controlling the movement of said movable roof panel between open and closed positions, said front guide shoes being pivotally mounted to said movable roof panel;

drive means including thrust transmitting drive cables operably connected to said rear guide shoes for moving said movable roof panel between open and closed positions;

guide blocks mounted to said movable roof panel and having a cam track formed therein;

cam follower means pivotally mounted to said rear guide shoes and engageable with said guide blocks for selectively raising the rear edge of said movable roof panel above said stationary roof structure of said vehicle and for lowering said rear edge of said movable roof panel below said stationary roof structure such that said movable roof panel can slide beneath said stationary roof opening;

actuator means for actuating said drive means;

means associated with the end of one of said cables, for detecting when said movable roof panel is in the closed position closing the roof opening; and

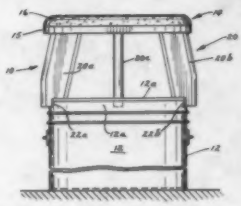
control means, responsive to said detecting means, for connecting said actuator means to said drive means to enable said movable roof panel to be selectively moved to an open position from said closed position and to a flip-up venting position from said closed position.

4,379,587

SEAT STRUCTURE

Leo D. Duncan, R.R. #2, Webster, Wis. 54893

Filed Feb. 23, 1981, Ser. No. 236,643
Int. Cl.³ A47C 9/00
U.S. Cl. 297—192 **1 Claim**



1. A seat structure for fishing purposes particularly adapted to be elevated upon an upstanding receptacle, having in combination

a rigid seat plate member,

a plurality of spaced leg members depending from said plate member,

said leg members having open ended notches at their bottom end portions,

a cylindrical upstanding receptacle forming a bucket member having an upper rim portion,

said leg members being spaced to have their respective notches seat upon said rim portion, and

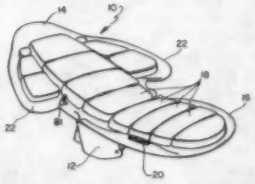
said leg members being of such height as to elevate said plate member in such spaced relation to said rim portion to provide free reaching access into said bucket.

4,379,588

REVOLVING SOLAR LOUNGER

Donald G. Speice, 14 Barberry La., Westerly, R.I. 02891

Filed Nov. 3, 1980, Ser. No. 203,548
Int. Cl.³ A47C 31/00
U.S. Cl. 297—217 **7 Claims**



1. A solar lounger comprising:

(a) a base;

(b) means for supporting a person in a reclined disposition on said base;

(c) collecting means disposed in a substantially unobstructed upwardly facing location on said lounger receiving and collecting solar energy and continuously converting same to electrical energy; and

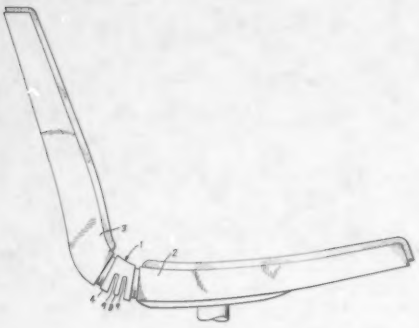
(d) electrical motor means mounted in said lounger and powered by said electrical energy continuously rotating said support means relative to said base during periods when solar energy reaches said collecting means in said lounger so that a person supported on the support means receives even exposure to the sun's rays.

4,379,589

RECLINABLE CHAIR

Mario H. S. Marino, Buenos Aires, Argentina, assignor to Interieur Forma S.A., Capital, Argentina

Filed Oct. 1, 1980, Ser. No. 192,818
Int. Cl.³ A47C *3/00*
U.S. Cl. 297—299 **4 Claims**



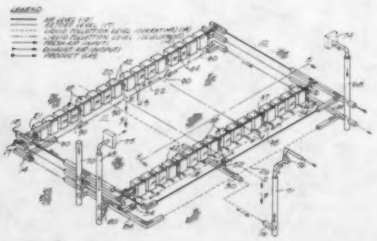
1. In a reclinable chair having a back and a seat articulated for reclining movement of the back with respect to the seat, the improvement comprising a generally U-shaped plate having opposed legs disposed at an angle with respect to each other, one of said legs being joined to said back and the other of said legs being joined to said seat, the material of said plate exerting a restoring force tending to restore said legs to said angle when forced away from said angle, said plate being substantially encased by a resilient material generally U-shaped in section, with the legs of said plate being substantially encased within the legs of said U-shaped resilient material, and said resilient material includes a flap extending parallel to and between said legs of said resilient material.

4,379,590

VENTILATION AIR AND PROCESS AIR DISTRIBUTION FOR IN SITU OIL SHALE RETORTS

C. Arthur Lefler, Casa Grande, Ariz.; John E. McCarthy, Palos Verdes, Calif.; Gordon B. French, Bakersfield, Calif.; Eugene A. Mills, Whittier, Calif., and David E. Miall, Lafayette, La., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Continuation of Ser. No. 24,459, Mar. 27, 1979, abandoned, which is a continuation of Ser. No. 892,652, Apr. 13, 1978, abandoned, which is a continuation of Ser. No. 768,878, Feb. 15, 1977, abandoned. This application Jul. 1, 1980, Ser. No. 165,081
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 **26 Claims**



1. A method for recovering liquid and gaseous products from a plurality of in situ oil shale retorts in a subterranean formation containing oil shale, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale, the method comprising the steps of:

excavating an upper level of underground workings;

excavating a first inlet airway between above ground and at least the upper level of underground workings;

excavating a lower level of underground workings at an elevation below the elevation of the upper level of underground workings;

excavating a second exhaust airway between above ground and at least the lower level of underground workings ;

establishing air communication between the upper level of underground workings and the lower level of underground workings;

withdrawing ventilation air under pressure from the exhaust airway for drawing ventilation air from above ground through the inlet airway, through the upper level of underground workings, through the air communication between the upper level of underground workings and the lower level of underground workings, and through the lower level of underground workings into the exhaust airway;

forming a plurality of in situ oil shale retorts, each of said retorts having a top boundary at an elevation below the elevation of the upper level of underground workings, a bottom boundary at an elevatin at or above the elevation of the lower level of underground workings and containing a fragmented permeable mass for formation particles containing oil shale;

establishing air communication between the upper level of underground workings and the top boundary of each of plurality of such in situ oil shale retorts;

establishing a combustion zone in each of a plurality of such in situ oil shale retorts having air communication with upper level of underground workings;

withdrawing process off gas containing gaseous products under pressure from the bottom boundaries of such a plurality of in situ oil shale retorts having combustion zones therein for drawing process air through the inlet airway and through the upper level of underground workings into such in situ oil shale retorts for advancing such a combusion zone downwardly through such a fragmented mass for retorting oil shale therein, wherein said process off gas is withdrawn from-the in situ retorts at a pressure lower than air pressure in the upper and lower level of underground workings; and

withdrawing liquid products from the bottom boundary of such in situ retorts having a combustion zone therein.

4,379,591

TWO-STAGE OIL SHALE RETORTING PROCESS AND DISPOSAL OF SPENT OIL SHALE

Joseph P. Tassoney, Diamond Bar, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Continuation-in-part of Ser. No. 752,990, Dec. 21, 1976, abandoned, which is a continuation-in-part of Ser. No. 658,811, Feb. 17, 1976, abandoned, which is a continuation of Ser. No. 496,970, Aug. 13, 1974, abandoned. This application Aug. 21, 1980, Ser. No. 179,988
Int. Cl.³ E21B *43/26*
U.S. Cl. 299—2 **7 Claims**

1. A method for recovering shale oil from a subterranean formation containing oil shale and for disposing of spent shale from surface retorting, comprising the steps of:

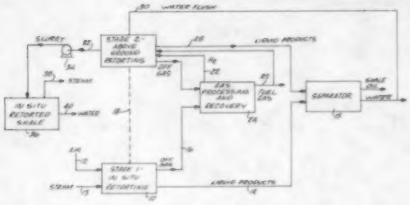
forming an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale;

retorting oil shale particles in the fragmented mass for producing liquid and gaseous products of retorting and a spent in situ retort containing a mass of hot in situ retorted oil shale particles having a temperature sufficient to produce steam upon contact with water;

surface retorting a mass of formation particles containing oil shale for producing liquid and gaseous products of retort-

ing and a mass of spent surface retorted formation particles;

drilling through the spent in situ retorted oil shale particles with a drill bit carried on each of a plurality of elongated conduits for installing the conduits at a plurality of locations spaced apart across the horizontal cross section of the spent in situ oil shale retort and in fluid communication with the hot in situ retorted oil shale particles;



introducing a slurry containing water and the surface retorted spent oil shale particles into the spent in situ oil shale retort through the conduits principally to the hot in situ retorted oil shale particles for contacting at least said hot in situ retorted oil shale particles with the water in said slurry for generating steam in the spent in situ oil shale retort; and

withdrawing steam from the spent in situ retort through one or more outlet lines that open into a portion of the spent in situ retort containing such generated steam.

4,379,592

METHOD OF MINING AN OIL-BEARING BED WITH BOTTOM WATER

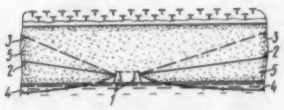
Gennady I. Vakhnin, poselok Yarega, ulitsa Oktyabrskaya, 2, kv. 11; Vladimir G. Verty, poselok Yarega, ulitsa Kosmonavtov, 4, kv. 29; Pavel G. Voronin, poselok Yarega, ulitsa Mira, 4, kv. 6; Evgeny I. Gurov, ulitsa Mira, 2, kv. 3; Vladimir G. Isaikin, ulitsa 30 let Oktyabrya, 3, kv. 49; Vladimir N. Mishakov, ulitsa Pushkinskaya, 1, kv. 4, all of Komi ASSR, Ukhta; Alexandr I. Obrezkov, poselok Yarega, ulitsa Neftyanikov, 1, kv. 14, Komi ASSR; Vitaly S. Sukrushev, poselok Yarega, ulitsa Mira, 2, kv. 12, Komi ASSR, Ukhta; Vladimir P. Tabakov, ulitsa Sofii Kovalevskoi, 4 "A", kv. 125, Moscow; Boris A. Tjunkin, ulitsa Oplesnina, 30, kv. 33, and Ljudmila I. Fotieva, poselok Yarega, ulitsa Lermontova, 10, kv. 1, both of Komi ASSR, Ukhta, all of U.S.S.R.

Filed Jan. 8, 1981, Ser. No. 223,242

Claims priority, application U.S.S.R., Apr. 17, 1979, 2749653

Int. Cl.³ E21C *41/10*

U.S. Cl. 299—2 **2 Claims**



1. A method of mining an oil-bearing bed with bottom water, comprising:

arranging a plurality of underground workings and at least one working gallery;

drilling inlet and recovery wells from said working gallery;

drilling from said working gallery additional wells to the water-bearing portion of the bed in the zone of oil contact with bottom water;

force-feeding a heat carrier through the inlet wells into the oil-bearing bed for heating the latter to a temperature at which oil assumes desired fluidity in the oil-bearing bed and for displacing oil to the recovery wells;

extracting oil from the recovery wells to the working gallery;

extracting water through said additional wells simultaneously with the injection of the heat carrier into the inlet wells and extraction of oil from the recovery wells; and

delivering oil from said working gallery via the workings to the ground surface.

4,379,593

METHOD FOR IN SITU SHALE OIL RECOVERY

Bernard E. Weichman, Houston, Tex., assignor to Multi Mineral Corporation, Houston, Tex.

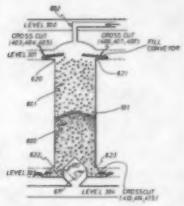
Division of Ser. No. 117,570, Feb. 1, 1980, Pat. No. 4,285,547.

This application Jan. 19, 1981, Ser. No. 226,041

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.³ E21C *41/10*

U.S. Cl. 299—2 **13 Claims**



9. A method of preparing an underground stope having generally vertical side walls for the in situ processing of oil shale ore comprising the steps of:

(a) removing a portion of the oil shale ore from the stope;

(b) rubblizing the remaining ore in the stope;

(c) extracting the rubblized ore from the stope;

(d) crushing the extracted ore to obtain ore particles of a size desired for retorting; and

(e) laterally supporting said side walls of the stope while the rubblized ore is being extracted by restoring at least a portion of the crushed oil shale particles to the stope at approximately the same rate as the rubblized ore is extracted to maintain the stope substantially filled.

4,379,594

PROCESS FOR SINKING OF SHAFTS

Alfred Zitz; Otto Schetina; Herwig Wrulich, and Arnulf Kissich, all of Zeltweg, Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Nov. 5, 1980, Ser. No. 204,382

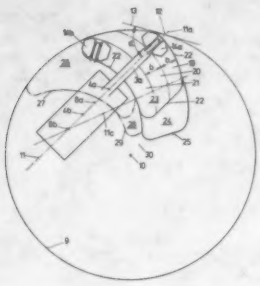
Claims priority, application Austria, Nov. 9, 1979, 7210/79

Int. Cl.³ E21D *1/06*; E21C *41/00*

U.S. Cl. 299—10 **12 Claims**

1. Process for sinking of shafts into the earth by means of a partial-cut cutting tool, characterized in that the shaft is sunk by means of a partial-cut cutting machine, having an universally pivotable cutting arm carrying at least one cutting head

and having a chassis fitted with crawler tracks, along a screw surface in the earth having its axis coinciding with the shaft to



be sunk, the cutting machine being moved on said screw surface.

4,379,595

RIPPER WITH OFFSET IMPACTING MEANS AND SLOTTED SHANK

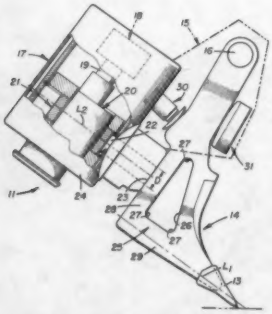
Michael A. Roussin; Steven D. Jones, and Albert L. Woody, all of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00209, § 371 Date Feb. 17, 1981, § 102(e) Date Feb. 17, 1981, PCT Pub. No. WO82/02813, PCT Pub. Date Sep. 2, 1982

PCT Filed Feb. 17, 1981, Ser. No. 277,741

Int. Cl.³ E01C *23/09*; A01B *35/00*

U.S. Cl. 299—37 **17 Claims**



1. In a ripper apparatus (**11**,**11***a*) having a movable support member (**14**,**14***a*), a ripper tip (**13**) mounted on said support member and disposed for impacting movement along a first line (L_1), and an impacting means (**17**) for intermittently applying an impacting force to said support member (**14**,**14***a*) in the direction of a second line (L_2), the improvement comprising

said first (L_1) and second (L_2) lines being substantially offset relative to each other and spring means (**25**,**25***a*) between said impacting means (**17**) and said ripper tip (**13**) for inducing transmission of said impacting force from said second line (L_2) to said first line (L_1) directly.

4,379,596

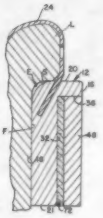
SUPERPOSITIONED VEHICLE WHEEL BALANCE WEIGHTS AND METHOD

Bernard J. Green, Bristol, Tenn., and Jerome J. Chorosevic, Bristol, Va., assignors to Speed Clip Manufacturing Corp., Bristol, Tenn.

Filed Sep. 14, 1979, Ser. No. 75,665

Int. Cl.³ B60B *13/00*

U.S. Cl. 301—5 B **4 Claims**



1. A balance weight for counterbalancing vehicle wheels having a rim flange with a protruding lip comprising,

a mass of a heavy metal having a body forming, a first balance weight for positioning on said flange,

a wheel securing means positioned on said weight for securing the weight to the wheel,

said body having a front face directed outwardly from the wheel when the weight is affixed to the wheel,

said front face having a plurality of cutout areas for receiving at least one additional weight,

said cutout means including side wall and rear wall surfaces, said side wall surfaces forming a retention means for said additional weight,

said retention means for restraining said additional weight from movement transverse to said side walls within the plane parallel to the plane of said vehicle wheel,

at least one additional mass of heavy metal forming a balance weight positioned within at least one of said cutout areas,

said additional weight including an adhesive layer to secure said additional weight to said rear wall surface of said cutout area to restrain said additional weight from movement transverse to the plane of said vehicle wheel,

whereby more than one additional weight may be affixed to said first balance weight without removing said first balance weight from said vehicle wheel.

4,379,597

EDGE LUGGED TIRE CARRYING RIMS, WHEELS AND FASTENING ASSEMBLIES

William D. Walther, Kettering, Ohio, assignor to Dayton-Walther Corporation, Dayton, Ohio

Filed Jun. 27, 1977, Ser. No. 810,436

Int. Cl.³ B60B *23/10*

U.S. Cl. 301—12 R **4 Claims**

1. A combination of dual inner and outer tire carrying rims seated and locked by inner and outer rim fastening assemblies on a vehicle wheel,

said wheel (**120**) having a plurality of inner and outer spoke members, each of said inner spoke members having a felloe comprising a radially outer axially oriented surface (**131**) substantially parallel to the rotational axis of said wheel and an adjacent radially inwardly directed surface (**132**) substantially perpendicular to the rotational axis of said wheel and providing a mounting location for an axially projecting component of said fastening assemblies, each of said outer spoke members having a felloe comprising a radially inwardly directed surface (**137**) substantially perpendicular to the rotational axis of said wheel and providing a mounting location for an axially projecting component of said fastening assemblies and an adjacent

radially inner axially oriented lateral surface (138) substantially parallel to the rotational axis of said wheel,

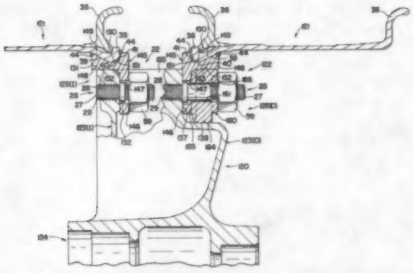
each of said rims (121) having a rim base edge portion comprising a radially inclined axially inner surface intersecting an axially oriented radially inner surface intersecting a radially directed axially outer surface, said rim base edge portion having a plurality of radially inwardly projecting clamp lugs integrally secured thereto,

each said clamp lug (145) having a curved body portion (148) with a radially outer face comprising surfaces for mating engagement with conforming rim base edge portion surfaces when each said clamp lug is being integrally secured to said rim base edge portion,

each said clamp lug (145) still further having a radially inwardly directed leg portion (146) extending inwardly from said body portion (148) substantially perpendicular to the rotational axis of said rim and having a bore (147) therein for receiving said axially projecting component of said fastening assemblies, said bore having an effective diameter greater than the effective diameter of an axially projecting component of said fastening assemblies,

each said clamp lug body portion having a radially inner axially oriented lateral surface (152) adjacent said leg portion (146),

each said outer rim fastening assembly (122) comprising said axially projecting component and a clamp element (160) and a rotatable nut (59) carried thereon, said clamp element having a bore (161) therein for receiving said axially



projecting component, said bore having an effective diameter greater than the effective diameter of said axially projecting component,

each said clamp element further having dual concentric and segmental axially movable axially oriented surfaces; a radially outer surface (163) and a radially inner surface (164),

each said clamp element still further having parallel axially movable radially directed surfaces; an axially inner surface (165) and an axially outer surface (166),

whereby, said inner rim is seated on, and thereafter locked on, said wheel by initial and final tightening of said inner rim fastening assemblies against each said clamp lug leg portion, said initial tightening of said inner rim fastening assemblies seating said axially oriented clamp lug lateral surfaces (152) in concentric registry with said axially oriented wheel felloe surfaces (131); said final tightening of said inner rim fastening assemblies locking said rim on said wheel by the full surface engagement of said clamp lug leg portions (146) with said radially inwardly directed wheel felloe surfaces (132),

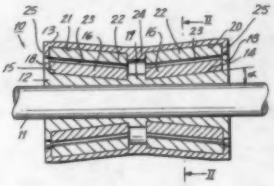
and, whereby, said outer rim is seated on, and thereafter locked on, said wheel by initial and final tightening of said outer rim fastening assemblies, said initial tightening of said rotatable nuts (59) against said axially outer clamp element surfaces (166) seating said axially oriented clamp lug lateral surfaces (152) in concentric registry with said radially outer clamp element surfaces (163) and seating said radially inner clamp element surfaces (164) in concentric registry with said radially inner axially oriented wheel felloe surfaces (138); said final tightening of said rotatable nuts (59) against said axially outer clamp element surfaces (166) locking said rim on said wheel by the full surface engagement of said axially inner clamp element surfaces (165) with said clamp lug leg portions (146) and by the full surface engagement of said clamp lug leg portions (146) with said radially inwardly directed wheel felloe surfaces (137).

4,379,598

MAGNETIC BEARING

Michael P. Goldowsky, Valhalla, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,058
Int. Cl.³ F16C *39/06*
U.S. Cl. 308—10 **15 Claims**



1. A bearing structure comprising

an inner cup-shaped ring of magnetic material, having an outer surface and outwardly extending flanges,

a first permanent magnet ring comprising a plurality of angularly distributed, radially and axially extending segments disposed on said outer surface between said flanges, said ring supporting and restraining said segments and providing a flux return path for said first ring,

an outer cup-shaped ring of magnetic material, having an inner surface and inwardly extending flanges, and

a second permanent magnet ring comprising a plurality of angularly distributed, radially and axially extending segments disposed on said inner surface between said inwardly extending flanges, said outer ring supporting and restraining the segments of said second ring and providing a flux return path therefor,

said first and second rings being spaced from each other to provide a gap therebetween, said magnets being poled perpendicular to the gap with like poles facing one another.

4,379,599

BEARING INNER RING

Yngve Sundqvist, Partille, Sweden, assignor to SKF Industries, Inc., King of Prussia, Pa.

Filed Dec. 29, 1980, Ser. No. 221,018
Claims priority, application Sweden, Jan. 28, 1980, 8000631
Int. Cl.³ F16C *33/58, 33/66*
U.S. Cl. 308—187 **2 Claims**

1. An inner ring for a rolling bearing having at least one raceway, a plurality of rolling elements travelling in a prede-

termined direction relative to said raceway, means defining a plurality of closely spaced grooves which extend over substantially the entire raceway surface substantially transversely to said predetermined direction of the rolling elements, said grooves being formed by a grinding operation on said inner raceway surface and the spacing between adjacent grooves being less than about one hundredth the diameter of a rolling element, said grooves operable to retain a lubricant therein and form a layer or film between the raceway and the rolling elements.

4,379,600

JOURNAL BEARING WITH DUST SEAL

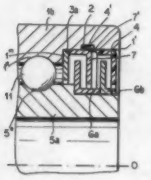
Armin Müller, Kronungen, Fed. Rep. of Germany, assignor to FAG Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

Filed Dec. 17, 1980, Ser. No. 217,390

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 7935867[U]

Int. Cl.³ F16C *33/80*

U.S. Cl. 308—187.1 4 Claims



1. In a journal bearing having an inner race and an outer race with confronting, generally cylindrical coaxial surfaces accommodating a set of rotary bodies in a clearance therebetween,

the combination therewith of a sealing ring of generally L-shaped half-section centered on the axis of said surfaces and provided with a plastically deformed peripheral lip received in an annular groove of one of said surfaces near an annular edge thereof, said sealing ring having a web extending radially close to the other of said surfaces at a location spaced axially outwardly from said groove for substantially closing said clearance toward the outside, said one of said surfaces being formed with a transverse shoulder spaced axially inwardly from said groove, and an annular member centered on said axis and in contact with said one of said surfaces between said shoulder and said groove, said member being provided with an annular camming edge overlapping said groove and facing said sealing ring while locking said lip in said groove.

4,379,601

SEWING MACHINE CRADLE SAFETY INTERLOCK

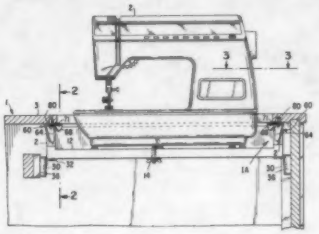
William G. Hauser, Fanwood, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Mar. 16, 1981, Ser. No. 244,376

Int. Cl.³ A47B *81/00*

U.S. Cl. 312—21 5 Claims

1. A cabinet for a sewing machine having a top surface provided with an opening through which a sewing machine may project, a sewing machine, a platform having the machine mounted thereon and being movable with respect to said top surface into either a first position within said opening below the level of the said top surface and substantially horizontal for sewing, or a second position extending downwardly under said top surface for storing the sewing machine when not in use, latch means with mutually engagable parts on the cabinet and said platform for selectively retaining the platform in said first position, the latch means being capable of being unlatched by raising said platform a predetermined amount from the said first position, a flap hingably attached to the cabinet and disposed within said opening, said flap being movable with respect to said top surface from a position substantially coplanar with said top surface to positions approximately 90 degrees above and 90 degrees below said top surface, and interlock



means mounted on the cabinet for movement into and out of a position wherein the interlocking means supports said flap in the said position substantially coplanar with said top surface and wherein the interlocking means interferes with upward movement of the platform by said predetermined amount to prevent the unlatching of said latch.

4,379,602

ROTATABLE STOCK CONTAINER CLOSET

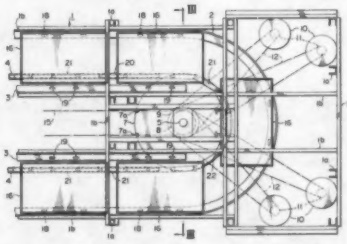
Takusuke Iemura; Takeshi Goto, and Hiroshi Komaki, all of Yokohama, Japan, assignors to Okamura Corporation, Japan

Filed Nov. 3, 1980, Ser. No. 203,449

Claims priority, application Japan, Mar. 11, 1980, 55-30585[U]

Int. Cl.³ A47B *49/00;* B65G *17/16*

U.S. Cl. 312—268 8 Claims



1. A rotatable stock container closet including a plurality of container conveying units arranged vertically one on another, each container conveying unit comprising:

(a) an endless loop outer rail means extending in the horizontal plane; the outer rail means generally having an elliptic shape comprising a pair of discrete straight sections extending in parallel with each other and a pair of discrete curvilinear sections, with the sections having free ends and the free ends of the curvilinear sections being connected to the free ends of the straight sections;

(b) discrete inner rail means extending in the horizontal plane, arranged inside the outer rail means at a certain distance away therefrom;

(c) discrete guide channel means extending in the horizontal plane, arranged between the inner and the outer rail means at a certain distance away therefrom;

(d) an endless loop traction chain means which is guided by the guide channel means and is adapted to be moved along the same;

(e) a means for driving the traction chain means; and

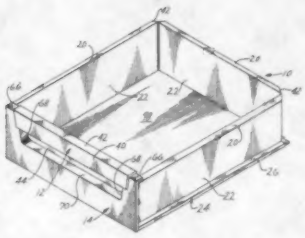
(f) a plurality of container means releasably disposed to the traction chain means and connected to ride along the rail means so as to be moved on and along the inner and the outer rail means and together with the traction chain means.

4,379,603

DRAWER WITH REMOVABLE HANDLE

John R. Johnson, Arcadia, and Robert Brydolf, Pasadena, both of Calif., assignors to Acme General Corporation, San Dimas, Calif.

Filed Dec. 22, 1980, Ser. No. 218,529
Int. Cl.³ A47B *95/02*
U.S. Cl. 312—320 **10 Claims**



1. A drawer assembly comprising:
a drawer front structure having a front face and a rear face; a pair of spaced apart upper edges above the front and rear faces; and a recess formed in the front and rear faces between the upper edges of the drawer front structure, the recess having a lower edge extending across the drawer front structure below said upper edges;
a slot formed adjacent the rear face of the drawer front structure below the lower edge of the recess; and
a drawer handle for being removably attached to the drawer front structure, the drawer handle having a cross-section of generally inverted U-shaped channel configuration including spaced apart front and rear flanges on opposite sides of a base portion of the channel; and a locking flange on a lower portion of the rear flange projecting toward the front flange of the channel, the locking flange being shaped to extend into the slot adjacent the rear face of the drawer front structure for releasably interlocking the locking flange in the slot to hold the rear flange in a fixed position with respect to the drawer front structure when the base portion of the channel rests on the upper edges of the drawer front structure for maintaining the front flange in a fixed position adjacent the front face of the drawer front structure, while the rear flange extends adjacent the rear face of the drawer front structure and covers at least a portion of the recess in the drawer front structure.

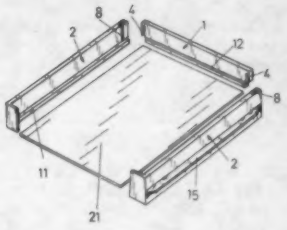
4,379,604

DRAWER

Erich Röck, and Josef Brunner, both of Höchst, Austria, assignors to Julius Blum Ges.m.b.H., Höchst, Austria

Filed Nov. 25, 1980, Ser. No. 210,397
Int. Cl.³ A47B *88/00*; B65D *6/00*
U.S. Cl. 312—330 R **5 Claims**

1. A drawer for an article of furniture, said drawer comprising:
two side members and a back member;
each said member being formed of a plastic material;
opposite ends of said back member including integral first connecting elements connectable to respective second connecting elements of said side members by relative vertical movement between said back member and said side members;
each of one of said first and second connecting means comprising a vertically extending T-shaped rail;
each of the other of said first and second connecting means comprising a vertically extending slot of a dimension to vertically slidably receive by complementary abutting surface contact a respective said T-shaped rail;
the said member having therein each said slot having a hollow box-like configuration including an inner side wall



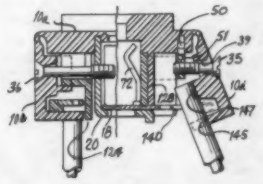
and an upper web, said slot being formed in said inner side wall and opening into a T-shaped opening in said upper web;
said back member and said side members having formed in inner sides thereof respective longitudinal horizontal grooves extending in a single horizontal plane when said back member and said side members are connected; and
a bottom drawer member slidably fitting into said grooves.

4,379,605

ELECTRICAL RECEPTACLE OF MOLDED BODY CONSTRUCTION

Ernest G. Hoffman, Middlefield, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Nov. 17, 1980, Ser. No. 207,345
Int. Cl.³ H01R *13/38*
U.S. Cl. 339—14 R **42 Claims**



1. A general purpose type of duplex receptacle comprising:
a receptacle body having a plurality of side walls;
a front cover mounted on said side walls;
at least one side cover connected to said front cover by a web hinge to pivot relative thereto toward and away from said receptacle body;
first and second groups of spaced-apart receptacle apertures extending through said front cover, each group of apertures accommodating the male blades of a male plug insertable into one or both of the groups,
a plurality of female contacts made of electrically conductive material, each of said female contacts mounted in substantial alignment with a different one of the apertures for making electrical contact with a corresponding blade of a male plug in an aperture;
a plurality of terminal members composed of electrically conductive material mounted in the receptacle body connected to different ones of said female contacts, each of said terminal members having an insulation severing por-

tion whereby electrical contact may be made with an insulation-covered conductor wire by penetrating the insulation:

means for electrically connecting a first one of said female contacts in the first group of apertures with a first one of said terminal members and means for electrically connecting a second one of said female contacts with a second one of said terminal members;

the one side cover having conductor pusher surfaces, operative when said at least one side cover is pivoted toward said receptacle body, to press an insulation-covered conductor having an unstripped free end placed on one of said terminal members against the one terminal member to cause severing of the conductor insulation by said one terminal member and the making of an electrical connection therebetween.

4,379,606

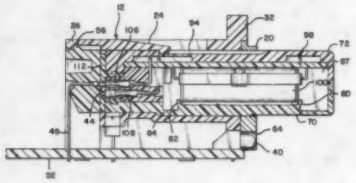
CARTRIDGE HOLDER AND CONNECTOR SYSTEM

Richard P. Clark, Hershey; Robert H. Frantz, Carlisle; Gary W. Hawk, Halifax, and John A. Root, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 8, 1981, Ser. No. 252,511

Int. Cl.³ H01R *23/70*

U.S. Cl. 339—17 CF **12 Claims**



1. A cartridge receiving connector system comprising:

a holder housing having means for mounting said holder housing on a circuit board, said holder housing defining a cartridge receiving cavity;

a connector housing detachably secured to said holder housing to close one end of said cartridge receiving cavity;

a plurality of electrical terminals mounted in said connector housing, each said terminal having one end making interconnection to said circuit board and an opposite end extending into said cartridge receiving cavity;

face plate means mountable on said holder housing defining a profiled entry to the other end of said cartridge receiving cavity; and

a cartridge assembly receivable in said cartridge receiving cavity and formed by a pair of mating cover members defining a circuit cavity therebetween, a circuit assembly mounted in said circuit cavity and having electrical connector means directed outwardly of said circuit cavity, and an apertured cover plate enclosing said circuit cavity and defining a profile for said cartridge which allows it to be inserted into said cartridge receiving cavity of said holder housing.

4,379,607

SHUTTERED RECEPTACLE

Wade R. Bowden, Jr., Northport, N.Y., assignor to Slater Electric Inc., Glen Cove, N.Y.

Filed Oct. 6, 1980, Ser. No. 194,615

Int. Cl.³ H01R *13/44*

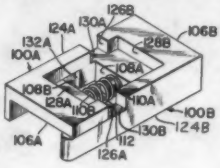
U.S. Cl. 339—40 **23 Claims**

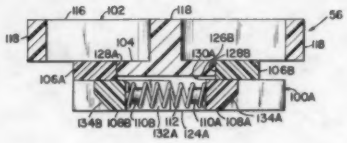
1. A shutter for selectively opening the slots of an electrical receptacle, said shutter comprising:

a frame and a pair of slides in contact therewith for sliding thereon;

each of said slides being formed of a longitudinal member having two transverse members coupled thereto, said transverse members being offset from each other in both longitudinal and transverse directions relative to said longitudinal member;

one of said slides being located about said frame in opposed relationship to the other of said slides wherein said longitudinal member of one of said slides is spaced apart from





the longitudinal member of the other of said slides; and wherein

a first of said transverse members of each of said slides serves as a barrier for closing the passageway of one of said slots, a second of said transverse members of each of said slides serves as a cam for deflecting said barrier when an implement is inserted through another of said slots.

4,379,608

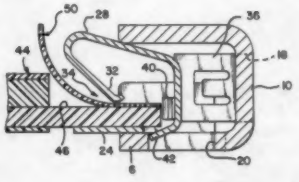
FLAT CABLE TO PLANAR CIRCUIT CONNECTOR

Billy E. Olsson, New Cumberland, and Lit-Yan Kam, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 11, 1981, Ser. No. 242,748

Int. Cl.³ H01R *23/66*

U.S. Cl. 339—75 MP **4 Claims**



1. A flat cable to substrate connector, comprising:

a clamping bar having a sidewall and a row of resilient springs spaced from said sidewall to define a width of an open side of said bar,

a housing having an opening receiving said clamping bar with said open side initially projecting from said opening and having an initial width larger than the width of said opening and larger than the combined thicknesses of a flat cable and a circuit carrying substrate when inserted into said open side,

said springs being biased by said housing upon relative displacement of said springs into said housing opening to clamp against the combination of said cable and said substrate,

means for latching said clamping bar to said housing while said springs are biased by said housing.

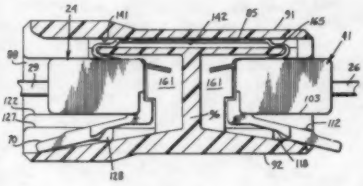
said means comprising at least one resilient flange of said clamping bar having a tab projecting through a respective slot in said housing and impinged against an external surface of said housing.

4,379,609

MODULAR CORD COUPLER JACK HAVING A DISCONNECTION ENCUMBRANCE

Edwin C. Hardesty, Perry Hall, Md., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 9, 1981, Ser. No. 241,951
Int. Cl.³ H01R 13/639
U.S. Cl. 339—91 R 36 Claims



1. A modular cord having connectorized ends, said cord comprising:

a length of cordage which comprises a plurality of individually insulated conductors which are enclosed in a jacket of plastic material;

a modular plug which terminates each end of said length of cordage, said plug comprising a body, a plurality of terminals mounted in said body and a resilient tab having one end connected to said body, a free end, and a pair of oppositely extending locking shoulders spaced from said free end, said tab in a normal orientation extending obliquely outwardly from said plug body; and

a coupler jack which is connected to one of said modular plugs which terminate said length of cordage, said coupler jack comprising:

a housing which includes two modular plug-receiving cavities each communicating with an associated external surface of said housing, a plurality of passageways that extend between and communicate with said cavities, and means formed within each of said cavities for cooperating with said oppositely extending shoulders of the tab of a plug that is received in each of said cavities for locking the plug within the housing when the plug tab is in said normal orientation, said one plug which terminates an end of said length of cordage being disposed in one of said cavities with at least said one of said cavities extending sufficiently inwardly from its associated external surface to cause the free end of the tab of a plug received in said one cavity to be within said one cavity and spaced from its associated external surface a distance which is sufficient to prevent facile unlocking and withdrawal of said one plug from said housing; and

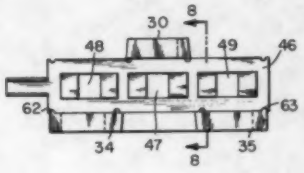
a plurality of wire-like contact elements each having a linear portion which is positioned in one of said passageways and retroflexed end portions which are positioned in said cavities and which are adapted to be engaged by terminals of modular plugs that are inserted into said plug-receiving cavities.

4,379,610

ELECTRICAL CONNECTOR WITH POLARITY BARRIER

James E. Upchurch, Indianapolis, Ind., assignor to Woods Wire Products, Inc., Carmel, Ind.

Filed Feb. 9, 1981, Ser. No. 232,882
Int. Cl.³ H01R 13/50, 13/64
U.S. Cl. 339—184 R 2 Claims



1. A female polarized electrical connector formed within a mold to receive a polarized electrical plug having a pair of blades, one of which is narrower than the other comprising:

a first and second female electrical contact, each with a wire extending therefrom, each contact including a top and bottom longitudinally extending edge with receiving means disposed therebetween and sized to receive a blade of said electrical plug;

housing means formed by said mold and enclosing said first and said second contact and including contact passage means leading externally from said receiving means;

a polarity barrier of electrically nonconductive material mounted on said first contact prior to insertion into said mold for formation of said housing means and positioned between said passage means and said receiving means of said first contact and defining at least one contact hole sized to allow passage of only the narrower of said blades of said plug, said barrier sized to fit with said first contact entirely within said mold;

first stop means on said barrier with said first stop means engaged with said top and bottom longitudinally extending edges of said first contact limiting relative lateral motion between said first contact and said barrier and wherein:

said barrier includes a top wall and a downwardly extending portion integrally connected together, said top wall has a downwardly facing surface which extends over and adjacent said top edge of said first contact with said one contact hole extending though said top wall toward said receiving means, said barrier further includes a bottom portion integrally attached to said downwardly extending portion, said bottom portion has an upwardly facing surface positioned adjacent said bottom edge of said first contact, said first stop means being located on said downwardly facing surface and said upwardly facing surface and holding said first contact adjacent said downwardly facing surface;

said first stop means includes at least one projection on said downwardly facing surface forming a first channel adjacent said downwardly extending portion receiving said top edge of said first contact;

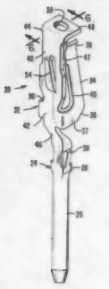
said first stop means further includes at least one projection on said upwardly facing surface forming a second channel adjacent said downwardly extending portion and aligned with said first channel receiving said bottom edge of said first contact.

4,379,611

CONNECTOR WITH LOW FORCE SOCKET CONTACT HAVING AN INTEGRAL HOOD

Ronald E. Foege, Mission Viejo, and Leslie L. Kerek, Irvine, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 3, 1980, Ser. No. 203,180
Int. Cl.³ H01R 13/40, 13/12
U.S. Cl. 339—217 S 15 Claims



1. A socket contact for removable emplacement within a cavity in a connector body comprising:

means having an opening for receiving a pin contact and including at least one spring member normally positioned in the opening and movable out of the opening when contacted by the pin contact;

a resilient support movable generally perpendicularly to the movement of said spring member; and

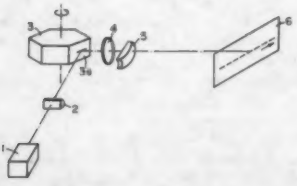
a hood shielding said opening means and coupled to said resilient support, said hood having means defining a non-circular opening larger than the pin contact and having larger and smaller dimensions, with the larger dimension extending generally parallel to the direction of the spring member movement to permit easy entry of the pin contact into electrical contact with said spring member even if the pin contact has an axis which is not centrally aligned with either of the openings, said hood being movable by the pin contact in a direction generally parallel with the smaller dimension of said non-circular opening means through flexure of said resilient support.

4,379,612

SCANNING OPTICAL SYSTEM HAVING A FALL-DOWN CORRECTING FUNCTION

Kazuhiko Matsuoka, and Kazuo Minoura, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1980, Ser. No. 182,088
Claims priority, application Japan, Sep. 4, 1979, 54-113094
Int. Cl.³ G02B 27/17
U.S. Cl. 350—6.8 7 Claims



1. A scanning optical system having a fall-down correcting function, comprising:

a light source portion;

a first imaging optical system for linearly imaging the light beam from said light source portion;

a deflector having its deflecting-reflecting surface near the linear image formed by said first imaging optical system; and

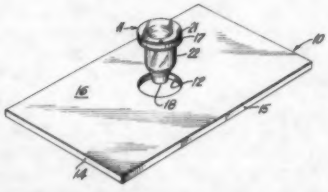
a second imaging optical system disposed between said deflector and a medium to be scanned, having means for making constant the moving velocity of a light beam spot on said medium, and comprising, in succession from the deflector side, a spherical single lens and a single lens having a toric surface, said toric surface having its curvature radius, in the deflecting surface formed by the light beam deflected by said deflector, greater than its curvature radius in the plane orthogonal to the deflecting surface, said single lens having a toric surface having a positive refractive power and comprising a surface having a negative refractive power on the deflector side and a surface having a positive refractive power on the medium side, in a cross-section containing the optical axis of said spherical single lens and perpendicular to the deflecting surface, said single lens having a toric surface further satisfying $(1/r_3)>(1/r_4)$, where r_3 is the curvature radius of the deflector side surface thereof in said deflecting surface and r_4 is the curvature radius of the scanned medium side surface thereof in said deflecting surface.

4,379,613

SOLAR ENERGY COLLECTOR

John F. Coburn, Cranford, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Feb. 23, 1981, Ser. No. 236,824
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.10 7 Claims



1. A planar fluorescent concentrator having a surface for receipt of incident solar radiation, the improvement comprising: said planar concentrator having the end walls, side walls and bottom surface coated with a light reflective material, said concentrator having an aperture defining a substantially circular band portion within said concentrator; and,

a substantially axially symmetrical light transmitting body having a first end and a circular light transmissive second end, said first end having an annular ring adapted to mate with and optically coupled to said band portion of said concentrator, said light transmitting body having a coating on the exterior surfaces thereof other than said annular ring and said circular light transmissive second end whereby light incident on said planar concentrator is internally reflected and radially directed toward said circulr band, enters said light transmitting body and is directed to and exits from said second end of said light transmitting body.

4,379,614

SPLICE CONNECTION FOR A PAIR OF LIGHT WAVEGUIDE CABLES WITH OPTICAL FIBERS IN TUBULAR SHEATHS

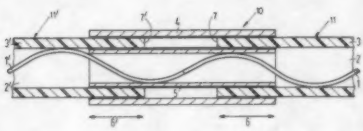
Heinrich Liertz, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 27, 1980, Ser. No. 181,946

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936716

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.21 2 Claims



1. A connecting device for a pair of light waveguide cables each having an optical fiber being loosely enclosed and arranged in a helical formation in a tubular sheath with an end of the fiber extending out of the end of the sheath, the device comprising the ends of the two optical fibers being butt-spliced together, an inner tube surrounding the butt-splice of the two fibers and having its ends being telescopically inserted into the ends of the sheaths to bridge the interval therebetween, and an outer tube having a longitudinally extending slot and being telescopically received on the ends of the sheaths, said outer tube being reduced in diameter to grip the ends of the sheaths so that the ends of the sheaths are supported by the inner tube as they are gripped by the outer tube.

4,379,615

DEVICE FOR TRANSMITTING ENERGY THROUGH ELECTRIC WIRE OR OPTICAL CABLE WOUND ON DRUM

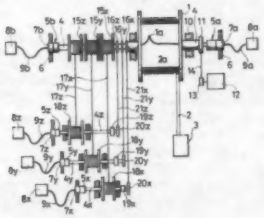
Yuichi Toda; Kohji Yano, and Katsuji Sakamoto, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 8, 1980, Ser. No. 176,609

Claims priority, application Japan, Aug. 20, 1979, 54-104929; Aug. 20, 1979, 54-104930

Int. Cl.³ G02B 5/14, 5/172; H04B 9/00

U.S. Cl. 350—96.23 11 Claims



1. A device for transmitting signals between a movable unit and a plurality of stationary units, comprising:

a multi-core cable, each core of said multi-core cable having a first end connected to said movable unit;

a rotor for winding said multi-core cable therearound;

at least one dummy bobbin;

means for coaxially mounting said at least one dummy bobbin with said rotor so as to be integrally rotatable therewith;

at least one dummy cable wound around said at least one dummy bobbin, a first end of said at least one dummy cable being connected to a second end of one of said multi-core cable cores, a second end of said at least one dummy cable being connected to one of said stationary terminal units; and

at least one dummy cable storing device arranged between said at least one dummy bobbin and said one of said stationary terminal units for storing said at least one dummy cable as said rotor is rotated.

4,379,616

ALUMINUM METAPHOSPHATE OPTICAL FIBERS

James W. Fleming, Jr., Fanwood, and John W. Shiever, Cedar Grove, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 26,410, Apr. 2, 1979, Pat. No. 4,302,074. This application May 1, 1981, Ser. No. 259,431

Int. Cl.³ C03B 37/05; G02B 5/172

U.S. Cl. 350—96.34 2 Claims

1. An optical fiber comprising a core and a cladding, the said fiber comprising aluminum metaphosphate, and in which fiber the molar ratio of aluminum to phosphorus is given substantially by the formula $Al(PO_3)_3$, the N.A. is greater than 0.3 at 0.9 microns, and the material dispersion is less than 0.07 nanoseconds/nanometer-kilometer at 0.9 microns.

4,379,617

REAR PROJECTION SCREEN FOR A COLOR TELEVISION PROJECTOR

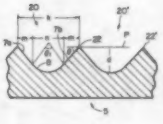
Yasutomo Funakoshi, Sakai, and Tamotsu Wakabata, Katano, both of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Apr. 7, 1981, Ser. No. 251,903

Claims priority, application Japan, Apr. 8, 1980, 55-46392; Apr. 8, 1980, 55-46393

Int. Cl.³ G03B 21/60

U.S. Cl. 350—126 14 Claims



1. A rear projection screen for a color television projector, comprising:

(a) a body in the form of a sheet made of a transparent synthetic resin; and

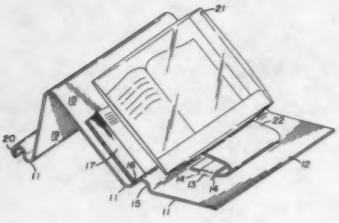
(b) a plurality of lenticular lenses integrally formed with said body, said plurality of lenticular lenses being arranged in parallel on one surface of said sheet, each of said plurality of lenticular lenses having a cross-section the contour of which is formed of a pair of linear portions and an arcuate portion interposed between the pair of linear portions, each of said linear portions having an inclination angle with respect to said sheet that is less than a total internal reflection angle defined by the material of said lenticular lenses.

4,379,618

MAGNIFIER VIEWER AND STAND

Marion A. Tall, 10419 NW. 32nd Pl., Apt. 236, Bellevue, Wash. 98004

Filed Mar. 16, 1981, Ser. No. 243,838
Int. Cl.³ G02B 27/02, 7/02
U.S. Cl. 350—239 4 Claims



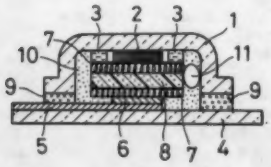
1. A magnifier viewer and stand having a one-piece base consisting of a rectangular sheet of synthetic resin formed in a continuous shape defining a flat horizontally disposed front portion, an upwardly extending compound curved portion adjacent said front portion and extending transversely of said base, the longitudinal edges of said curved portion being disposed on the plane of said flat front portion, an upwardly angled inclined portion adjacent said curved portion on the opposite edge thereof with respect to said front portion, said inclined portion arranged to support an opened book to be viewed with said book engaging said curved portion, a downwardly angled portion adjacent said inclined portion having a transversely extending lower section on said plane of said front portion, a secondary curved portion adjacent said lower section of said downwardly angled portion and extending transversely of said base, said secondary curved portion forming the terminal back edge of said one-piece base, transversely extending spaced slits in said flat front portion defining a band like section therebetween raised with respect to said plane of said front portion and a rectangular molded magnifier lens of a size comparable with said inclined portion of said base, a support arm for said lens, said support arm being curved between its ends to define a flat extension on one end slidably disposed beneath said band-like section of said front portion and an angled extension on its other end engaging said lens arranged to position said lens on the same angle as said upwardly angled inclined portion of said base.

4,379,619

ELECTRO-CHROMIC DISPLAYS

Hiroshi Kuwagaki, Kyoto; Kohzo Yano, and Sadatoshi Takechi, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 19, 1980, Ser. No. 218,419
Claims priority, application Japan, Dec. 26, 1979, 54-170974
Int. Cl.³ G02F 1/17
U.S. Cl. 350—357 3 Claims



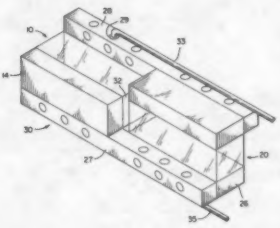
1. In an electro-chromic display wherein the outer frame of the display, comprising a pair of oppositely disposed substrates, confines an electrolyte, the improvement comprising joining the peripheral edges of said oppositely disposed substrates with an addition reaction type silicone resin adhesive containing an inorganic substance in the form of a fine powder, said inorganic substance preventing the electrolyte from leaking out of the display in gaseous form through the adhesive.

4,379,620

LIGHT MODULATOR EMPLOYING ELECTROOPTIC CRYSTALS

Kent E. Erickson, Brookside, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Mar. 20, 1980, Ser. No. 132,025
Int. Cl.³ G02F 1/03
U.S. Cl. 350—387 8 Claims



1. An electrooptic modulator comprising an assembly comprising:

(a) a pair of electrooptic crystal subassemblies, each of which comprises:

(i) an elongate, rectilinear, transparent crystal element consisting essentially of a compound exhibiting electrooptic birefringence, said crystal element having a transverse directional optic axis disposed perpendicular to two parallel opposing longitudinal faces of said crystal element and,

(ii) a pair of rigid, elongate, electrically-conductive electrodes, each of which is affixed to and contiguous with a respective one of said opposing faces, thereby establishing, with respect to said directional optic axis, a front and a back electrode for said subassembly;

(b) said subassembly pair being arranged end-to-end with the longitudinal axes of said crystal elements in line and the respective optic axes of said crystal elements disposed orthogonal to one another and to the longitudinal axis of said end-to-end arrangement; and

(c) a pair of rigid, electrically-conductive pole pieces respectively affixed to and bridging the front electrode of the first and the back electrode of the second of said subassembly pair, and the front electrode of the second and the back electrode of the first of said subassembly pair.

4,379,621

IMAGE DISPLAY DEVICE UTILIZING BIREFRINGENCE PROPERTIES OF FERROELECTRIC CERAMIC MATERIAL

Masaru Ikedo, Neyagawa; Masafumi Watari, Moriguchi; Yoshitake Yasuno, Kyoto, and Tadaoki Yamashita, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

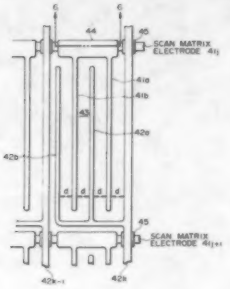
Filed Oct. 31, 1980, Ser. No. 202,658
Claims priority, application Japan, Nov. 1, 1979, 54-142642; Nov. 15, 1979, 54-148417
Int. Cl.³ G02F 1/03
U.S. Cl. 350—392 14 Claims

1. An image display device comprising:

first and second polarizers having their planes of polarization oriented at right angles to each other;

a transparent electrooptic plate of ferroelectric material between said first and second polarizers; and

a matrix electrode arrangement secured to one surface of said electrooptic plate including a plurality of parallel rows of electrodes and a plurality of parallel columns of electrodes to define a plurality of elemental areas on said electrooptic plate, said matrix arrangement further including in each of said elemental areas first parallel finger



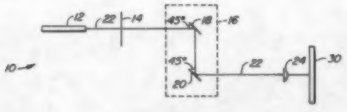
electrodes connected in circuit with a said row electrode and second parallel finger electrodes connected to a said column electrode, and a unidirectionally conductive means connected between said first finger electrodes and the said row electrode for reducing cross coupling between plural elemental areas defined by the said row electrode, said first and second finger electrodes being interleaved with each other and oriented at 45 degrees to the planes of orientation of said first and second polarizers.

4,379,622

BROAD BAND PHASE SHIFT SYSTEM

Dennis G. Fischer, Mountain View, and Arnold L. Bloom, Menlo Park, both of Calif., assignors to Coherent, Inc., Palo Alto, Calif.

Filed Oct. 2, 1980, Ser. No. 193,240
Int. Cl.³ G02B *5/30, 27/28*
U.S. Cl. 350—394 **2 Claims**



1. A broad band phase shift system having phase retardation of substantially ninety degrees comprising:

two substantially identical reflecting means, each having an angle of phase retardation of substantially forty-five degrees;

each reflecting means comprising:

a substrate of a material having high reflectivity;

a plurality of first dielectric material having low refractive index;

a plurality of second dielectric material having high refractive index; and

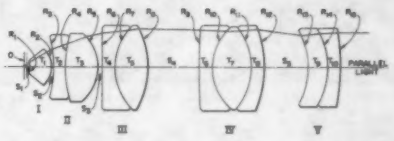
said first and second dielectric materials on said substrate in alternate layers.

4,379,623

40X MICROSCOPE OBJECTIVE

Edward B. Rybicki, Depew, N.Y., assignor to Warner Lambert Technologies, Inc., Southbridge, Mass.

Filed Apr. 28, 1980, Ser. No. 144,478
Int. Cl.³ G02B *9/60, 21/02*
U.S. Cl. 350—414 **3 Claims**



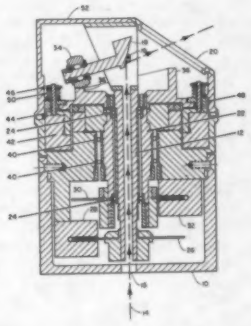
1. A semi-apochromatic microscope objective having a numerical aperture of 0.80 which comprises, aligned in sequence along an optical axis, a concavo-convex positive singlet I, a concavo-convex positive doublet II, a plano-convex positive doublet III, a biconvex positive triplet IV and a concavo-convex negative doublet V, said biconvex positive triplet IV comprising a convex-concavo first element, a biconvex second element, and a concavo-convex third element.

4,379,624

LASER BEAM STEERING DEVICE

Samuel A. Miller, and Larry L. Jeffris, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 13, 1981, Ser. No. 253,417
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—486 **5 Claims**



1. A laser beam steering mechanism for azimuth and elevation direction control of an incident laser beam comprising:

an inner shaft with an aperture the length of its axis, said axis aligned with said incident laser beam to permit direct passage of said incident laser beam;

an outer shaft concentrically mounted around said inner shaft for providing a dual rotational axis around said incident laser beam;

a pivoted mirror rigidly attached to said inner shaft for deflecting said incident laser beam after it has passed through said inner shaft aperture, said mirror reflecting said beam in a given azimuthal direction determined by the rotation of said inner shaft;

means for determining the orientation of said inner shaft;

means for monitoring the orientation of said outer shaft;

a cam attached to said outer shaft for changing the elevation of said mirror;

a cam follower connected to said mirror and set to the azimuthal position of said inner shaft for following said cam;

a torque motor set against said outer shaft for rotating said inner shaft;

a clutch assembly mounted to said outer shaft for coupling said inner shaft to the motion of said outer shaft at selected times, said inner and outer shaft either can be turned together or only said outer shaft turns; and

a dome with at least one window mounted to said inner shaft for transmitting said reflected laser beam despite rotation of said inner shaft.

4,379,625

OPERATION MICROSCOPE

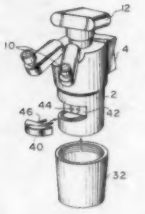
Yoshihisa Uchiumi, and Akira Tanabe, both of Tokyo, Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1981, Ser. No. 248,032

Claims priority, application Japan, Apr. 3, 1980, 55-44012[U]; Oct. 31, 1980, 55-154786[U]

Int. Cl.³ G02B *21/06*

U.S. Cl. 350—528 **4 Claims**



1. An operation microscope comprising a body, an objective lens, a pair of magnification power changing lens systems located behind said objective lens and in parallel with an optical axis of said objective lens, a light dividing means for dividing light passed through at least one of the pair of magnification power changing lens systems and for introducing said light into a pair of eye lenses and a camera, a first illumination system for illuminating operated parts of a patient's body for observation, and a second illumination system for illuminating operated parts of the patient's body for photographing, said second illumination system including a lamp house and a socket, said socket being positioned in a recess formed in said microscope body at a side of said pair of magnification power changing lens systems, said lamp house having a plug and being adapted to be fitted to said recess after removing said objective lens from said microscope body so as to insert said plug into said socket, and said lamp house including a light source.

4,379,626

FACILITY FOR CONDUCTING OPHTHALMOLOGICAL EXAMINATIONS

Paul F. Bailey, Jr., 4885 NW. Barnes Rd., Portland, Oreg. 97210

Filed Oct. 14, 1980, Ser. No. 196,261

Int. Cl.³ A61B *3/00*

U.S. Cl. 351—200 **6 Claims**

1. A facility for conducting ophthalmologist tests on a plurality of patients comprising:

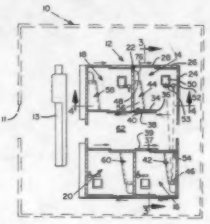
a first examining station defined by a room having an opening provided in one wall thereof;

a second examining station defined by a room also provided with an opening in one wall thereof opposed laterally to said first examining station;

first display means disposed inside said second examining station for displaying test indicia to be visually perceived by a patient situated in said first examining station;

second display means disposed inside said first examining station for displaying test indicia to be visually perceived by a second patient situated in said second examining station;

first isolating means for isolating said first display means from said second examining station including a window presented toward and substantially aligned with the opening of said first examining station; and



second isolating means for isolating said second display means from said first examining station including a window presented toward and substantially aligned with the opening of said second examining station.

4,379,627

TRAY FOR STORING AND CLASSIFYING SLIDES AND A VIEWER FOR SLIDES DISPOSED IN SUCH TRAYS

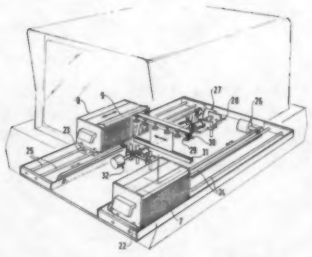
Albert Naël, Sainte Genevieve des Bois, France, assignor to Compagnie Generale d'Automatisme CGA Alcatel, Paris, France

Filed Aug. 19, 1981, Ser. No. 294,275

Claims priority, application France, Sep. 9, 1980, 80 19406

Int. Cl.³ G03B *23/08*

U.S. Cl. 353—27 A **6 Claims**



1. A tray for storing and classifying slides, said tray comprising:

parallel, plane, top and bottom members held in fixed relationship to each other,

said parallel, plane, top and bottom members being provided with corresponding facing sets of transverse, slide-receiving grooves,

said tray being symmetrical about a longitudinal plane passing through the mid points of both sets of grooves and having open left and right sides via which slides may be inserted in or removed from the tray, and

two, symmetrically disposed, independently movable side flaps pivotably mounted on at least one of said top and bottom members,

each side flap having a first, open position in which it allows slides to be inserted or removed via its side of the tray, and a second, closed position in which it prevents insertion or removal of slides.

4,379,628

FOLDING TRANSPARENCY (MICROFICHE) VIEWER

John N. Graef, West Bend, Wis., assignor to Realist, Inc., Menomonee Falls, Wis.

Filed Aug. 10, 1981, Ser. No. 291,247
Int. Cl.³ G03B 21/30
U.S. Cl. 353—73 10 Claims

1. A folding viewer for transparencies comprising

a housing containing means providing a light source and a folded light path including a condenser lens and a projection lens,

means for positioning a transparency between the lenses,

a second housing pivotally connected to the first housing for movement between a folded position in which the second housing fits over the first housing in telescopic fashion and a viewing position in which it lies under the first housing,

a screen depending into the second housing when the second housing is in said viewing position, said screen being positioned to have an image of the transparency projected thereon,

a mirror fixed in the second housing,

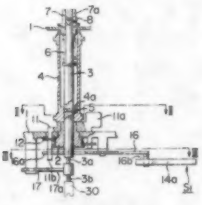
a viewing aperture in the second housing permitting the user to see the image on the screen as reflected by the mirror.

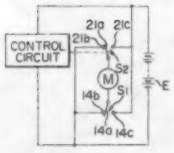
4,379,629

APPARATUS FOR CONTROLLING FILM ADVANCEMENT IN A CAMERA

Koichi Daitoku, Tokyo, Japan, assignor to Nippon Kogaku K.K., Japan

Filed May 13, 1981, Ser. No. 263,173
Claims priority, application Japan, May 21, 1980, 55-66381
Int. Cl.³ G03B 1/18
U.S. Cl. 354—173 8 Claims





1. An apparatus for controlling film advancement in a camera of the type that has driving means, including an electrical motor, for driving a take-up spool to wind film thereon from a supply spool for film take-up and for alternatively driving the supply spool to rewind film, and which has change-over switch means having a first state for supplying current in one direction to the electrical motor to drive the motor in a forward direction for film take-up and having a second state for supplying current in the opposite direction to the electrical motor to drive the motor in a reverse direction for film rewind, the apparatus comprising:

a displacement member for controlling the state of the change-over switch means, the displacement member having a first position at which it disposes the change-over switch means in the first state and having a second position at which the change-over switch means is in the second state;

means for controlling the position of the displacement member, the controlling means including first and second members, each having first and second operating positions, and first and second biasing means for respectively biasing the first and second members to the first operating position, the first and second members being operable to hold the displacement member in its first position upon at least one of the first and second members being in the first operating position and being operable to permit movement of the displacement member to its second position only upon both the first and second members being in the second operating position, the first member being disposed in the second operating position when film is wound upon the take-up spool, and the second member being disposed in the second operating position in response to the initiation of film rewind; and

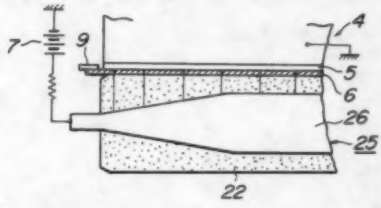
means operable upon initiation of film rewind for releasably holding the second member in the second operating position until initiation of subsequent film take-up.

4,379,630

TRANSFER ROLLER FOR ELECTROPHOTOGRAPHIC APPARATUS

Yoshiro Suzuki, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Mar. 27, 1981, Ser. No. 248,279
Claims priority, application Japan, Apr. 1, 1980, 55-41158; Aug. 29, 1980, 55-122935[U]
Int. Cl.³ G03G 15/16
U.S. Cl. 355—3 TR 16 Claims



1. In a transfer roller for electrophotographic apparatus for transferring a toner image formed on a latent image electric charge holding body to a record sheet by making the record sheet closely contact with the latent image electric charge holding body, the improvement comprising:

an electrically conductive roller shaft connected to a transfer bias electric source and operative to apply a given transfer bias voltage between the roller shaft and the latent image electric charge holding body; and

an electrically conductive resilient member coated around the outer periphery of the electrically conductive roller shaft, said resilient member having a constant outer diameter and having a resistance value which is increased toward the respective end faces at two end portions of the electrically conductive resilient member.

4,379,631
APPARATUS HAVING A COPIER FUNCTION AND A PRINTER FUNCTION

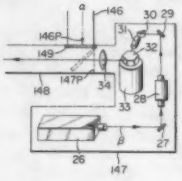
Takashi Kitamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1980, Ser. No. 156,218

Claims priority, application Japan, Jun. 8, 1979, 54-72611; Jun. 11, 1979, 54-73635; Jul. 13, 1979, 54-89112; Dec. 26, 1979, 54-169565; Dec. 28, 1979, 54-171332

Int. Cl.³ G03G *15/00*; G03B *19/00*

U.S. Cl. 355—14 R **5 Claims**



1. An apparatus for recording on a recording medium with a beam carrying information, said apparatus comprising:

an original table having a transparent plate providing a surface on which an original may be placed;

means defining a first optical path extending between said original table and the recording medium;

means for producing a high energy beam carrying information;

means defining a second optical path extending between said beam producing means and the recording medium; and

means, provided across said first optical path, for blocking the high energy beam produced by said producing means from being projected to said original table.

4,379,632
METHOD AND APPARATUS FOR PREVIEWING EXPOSED PHOTOGRAPHIC FILMS OR THE LIKE

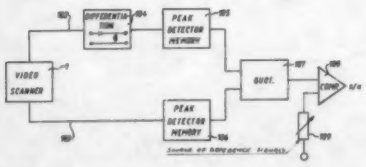
Hubert Dedden, Langenfeld, and Jürgen Pfingst, Leverkusen, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 102,152, Dec. 10, 1979, abandoned, which is a continuation of Ser. No. 854,906, Nov. 25, 1977, abandoned. This application Nov. 12, 1981, Ser. No. 320,473

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1976, 2654943

Int. Cl.³ G03B *27/80*

U.S. Cl. 355—68 **37 Claims**



21. Apparatus for examining a series of successive originals of varying sharpness, such as exposed and developed film frames, to allow for detection of those originals which are unfit for the making of reproductions, comprising means for moving successive originals of a series of originals to a predetermined position; means for photoelectrically scanning at least a selected portion of the original in said position, including means for generating signals which are indicative of the characteristics of such selected portion of the original in said position; means for utilizing said signals to ascertain the density range of the selected portion of the original in said position; means for processing said signals to determine the density gradient of at least one scanned region of the selected portion of the original in said position; means for forming a quotient of the determined density gradient and the density range of the respective selected portion; a source of reference signals denoting a predetermined threshold value; and means for comparing said quotient with said threshold value, an original being considered fit for the making of reproductions when said quotient exceeds said threshold value.

4,379,633
APPARATUS FOR MAINTAINING ADJUSTMENT OF COINCIDENCE AND RELATIVE PHASE RELATIONSHIP OF LIGHT BEAMS IN AN INTERFEROMETER

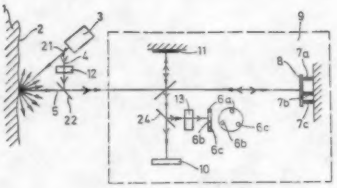
Wolf Bickel, Bergisch Gladbach; Walter Kaule, Cologne, and Erik Primbsch, Ahrensburg, all of Fed. Rep. of Germany, assignors to Krautkramer-Branson, Inc., Stratford, Conn.

Filed Jul. 10, 1981, Ser. No. 282,036

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1980, 30 29 716

Int. Cl.³ G01N *29/04*; G01B *9/02*

U.S. Cl. 356—359 **21 Claims**



1. The method for automatically maintaining an adjustment of the coincidence and of the relative phase relationship of beams of light in the field of view of an interferometer in which beams of laser light are so delayed in time relative to one another over the different optical paths as to satisfy the interference condition required for producing an amplitude modulated signal from a measuring beam which has been frequency modulated by ultrasonic deformations manifest on a workpiece surface comprising:

illuminating the workpiece surface on which ultrasonic wave deformations are manifest with a beam of laser light and passing the light reflected at said workpiece surface as a measuring beam, frequency modulated by said deformations, to an optical interferometer;

separating a portion of said laser light from said laser beam before it is incident on the workpiece surface and passing said non-incident portion as a control beam to said interferometer;

causing said measuring beam and said control beam to traverse said interferometer through substantially the same optical paths;

sensing by means of first photoelectric means said measuring beam after it has traversed said interferometer and providing a corresponding amplitude modulated electrical signal;

disposing in the field of view plane of the control beam second photoelectric means which responsive to the control beam illumination thereupon provide an electrical control signal adapted to indicate a change of the alignment of the optical paths of the interferometer from a set condition, and

applying said control signal from said second photoelectric means to electromechanical positioning means supporting an optical component of the interferometer to cause a positioning adjustment of said optical component for restoring said set condition responsive to said control signal being indicative of such change.

4,379,634

METHOD AND DEVICE FOR DETECTING BIREFRINGENT SUBSTANCES IN LIQUIDS

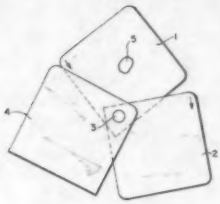
Moshe Rosenthal, Bündnerstrasse 18, Basel, Switzerland (4055)

Filed Sep. 20, 1977, Ser. No. 835,015

Claims priority, application Switzerland, Sep. 28, 1976, 12282/76

Int. Cl.³ G02B 27/28; G01N 1/10, 21/23

U.S. Cl. 356—365 4 Claims



1. Method for determination of birefringent solid particles or crystals in liquids, said method comprising placing a small amount of the liquid to be analysed between two polarizing sheets, moving said two sheets relative to each other to a relative position where they directly overlie each other with crossed directions of polarization, pressing said two sheets against each other, and observing in transmitted light the presence or absence of light traces contrasting against the dark background of the crossed polarizers, the presence of which traces indicating the presence of birefringent solid particles or crystals in said liquid.

4,379,635

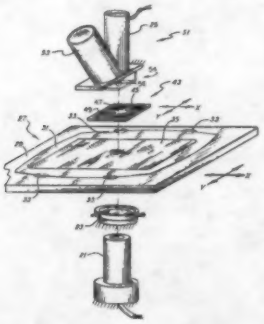
AUTOMATIC APERTURE SIZE MEASUREMENT APPARATUS AND PROCESS

James R. McColl, Concord, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 7, 1981, Ser. No. 251,833

Int. Cl.³ G01B 11/02

U.S. Cl. 356—387 13 Claims



1. In apparatus for automatically measuring aperture size of a slotted apertured material having a plurality of slots each with a longitudinal axis, a comparator mask means overlaying the slotted apertured material, a light source and light detector positioned on opposite sides of said comparator mask means and slotted apertured material and providing a light beam for passage therethrough and a computer means coupled to the slotted apertured material and comparator mask means and responsive to a signal from said light detector representing light transmission of the slots, the improvement comprising a light-beam size control means including a rhombic-shaped aperture having a diagonal axis substantially normal to said longitudinal axis of said slots whereby substantially uniform movement of said slotted apertured material and comparator mask means and said light beam size control means with respect to one another along said diagonal axis provides a relatively uniform rate of change of light passing through said slots.

4,379,636

INSPECTION DEVICE

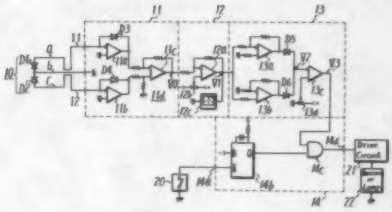
Hajime Yoshida, Tokyo, Japan, assignor to Hajime Industries Ltd., Tokyo, Japan

Filed Sep. 25, 1980, Ser. No. 190,712

Claims priority, application Japan, Oct. 18, 1979, 54-134502

Int. Cl.³ G01J 3/50

U.S. Cl. 356—407 7 Claims



1. An inspection device comprising:

(a) a color sensor means having photoelectric conversion elements, each being responsive to respective different wave lengths of light from an object to be inspected and producing an electrical signal;

(b) a light wave length detecting means for receiving the electrical signal from said color sensor means and for producing an output voltage which is varied to negative and positive sides in response to wave length component ratio of light incident from said object on said color sensor means;

(c) a zero balance setting means which processes the output voltage from said light wave length detecting means and then takes a zero balance when a standard object is picked by said color sensor means;

(d) a tolerance range setting means which receives an output of said zero balance setting means and produces an abnormal signal when the last mentioned output exceeds a predetermined tolerance range;

(e) a location detection means which produces an electrical signal to notify when said object arrives at a predetermined location; and

(f) a detection location timing means which receives the electrical signal from said location detection means, produces a pulse signal with a short time width and passes the output of said tolerance range setting means only when the output pulse signal appears.

4,379,637

RADIATION MEASURING APPARATUS

Carl J. Schmid, Port Washington, N.Y., assignor to Peerless Electronics Research Corp., Commack, N.Y.

Continuation-in-part of Ser. No. 15,943, Feb. 28, 1979, Pat. No. 4,273,449. This application May 11, 1981, Ser. No. 262,174

Int. Cl.³ G01N 21/85; G02B 27/14

U.S. Cl. 356—411 18 Claims

1. Apparatus for measuring a characteristic of a sample, the apparatus comprising, in combination:

a source of radiation;

means for receiving radiation from said source and directing the same along an optical axis;

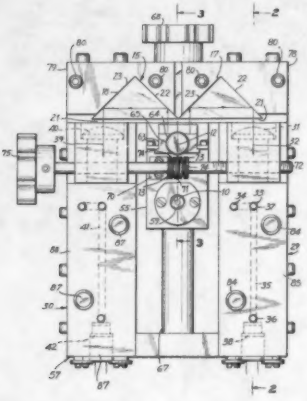
housing means supporting the radiation directing means for

movement in a direction at least substantially transverse to said optical axis;

radiation dividing means disposed in a stationary position along said optical axis for separating radiation from said radiation directing means into separate beams;

an optical system located in spaced relationship with said optical axis for receiving one of said beams;

a sample holder in position to receive said one beam from said optical system;



a detector for receiving said one beam from the sample holder and for detecting the intensity of the received beam; and

means for moving the housing means in said substantially transverse direction to move said radiation directing means toward and away from said optical system and thereby change the intensity of said one beam.

4,379,638

DEVICE FOR PUTTING INTO CONTACT SUBSTANCES EXISTING IN AT LEAST TWO DIFFERENT PHASES

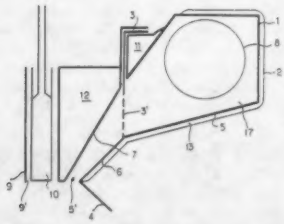
Francois J. Prudhon, Versailles, and Augustin L. Scicluna, Aubervilliers, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 19,362, Mar. 12, 1979, abandoned. This application Apr. 9, 1981, Ser. No. 252,358

Claims priority, application France, Mar. 14, 1978, 78 07248

Int. Cl.³ B01F *5/00, 15/06, 15/02*

U.S. Cl. 366—149 **5 Claims**



1. A device for putting into contact substances existing in different phases, at least one of which is a fluid or gaseous phase comprising a housing of circular cross section, an inlet adjacent the outer periphery of the housing for introduction of the fluid or gaseous phase tangentially into the housing for helicoidal flow therein, an axial outlet opening at the center of the housing, said housing having a converging section extending inwardly to said outlet opening, a divergent section extending from the outlet opening to define a bicone between said converging and diverging sections which define a restricted axial passage at the outlet, at least one axial pipe, the outlet of which is at the level of the restricted passage through which at least one of the other phases is introduced for issuance at the restricted passage to be engaged by the helicoidal flow at about the restricted passage, and a cylindrical dividing member which extends axially through the housing intermediate the inlet and outlet, having passages therein for enabling the helicoidal flow of the one phase for enabling passage of the helicoidal flow of the one phase therethrough from the inlet to the outlet.

4,379,639

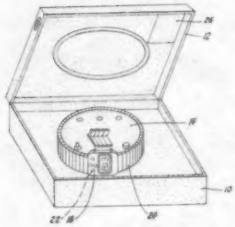
ALARM WATCH WITH REMOTE SONIC AMPLIFIER

Eugene Stephens, 19311 Montrose, Detroit, Mich. 48235

Filed Oct. 14, 1980, Ser. No. 196,542

Int. Cl.³ G04B *47/00*

U.S. Cl. 368—12 **7 Claims**



1. An alarm device comprising:

a watch having means for producing an audio signal at a selected time;

audio amplifier means physically separated from said watch, and sensing means for energizing said audio amplifier means in response to an audio alarm produced by said watch; and

the audio amplifier means including a silicone element, and a microphone for amplifying the alarm, said microphone being partially embedded in the silicone element.

4,379,640

TIMEPIECES HAVING A DEVICE OF REQUESTING AND RECITING TIME SETTINGS IN THE FORM OF AUDIBLE SOUNDS

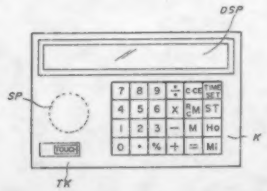
Tomohiro Inoue, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 96,319, Nov. 21, 1979, abandoned. This application Sep. 14, 1981, Ser. No. 302,130

Claims priority, application Japan, Nov. 22, 1978, 53-144401

Int. Cl.³ G04B *21/08;* **G10L** *1/00*

U.S. Cl. 368—63 **3 Claims**



1. A timepiece including a voice synthesizer system for automatically instructing an operator by audibly presenting time setting instructions comprising:

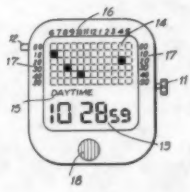
time indicating means for informing the operator of the actual time of day;
first storage means for holding synthetic speech data in a plurality of locations;
second storage means for holding position data representative of the locations of said synthetic speech data, said position data being stored in a plurality of locations, each representative of a portion of a said instruction;
first selection means for selecting locations in said second storage means, thereby selecting instructions to be audibly reproduced;
said instructions audibly instructing the operator of the correct procedures for programming the actual time of day;
second selection means for recalling synthetic speech data from said first storage means in correspondence to the position data produced by said second storage means; and
synthetic speech generator means for producing audible instructions derived from said synthetic speech data to instruct a timepiece user of the correct time setting procedures.

4,379,641

MULTI-ALARM ELECTRONIC WATCH

Shuji Maezawa, and Masami Murata, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jun. 18, 1980, Ser. No. 160,767
Claims priority, application Japan, Jun. 18, 1979, 54-77189
Int. Cl.³ G04B *23/02*
U.S. Cl. 368—74 **21 Claims**



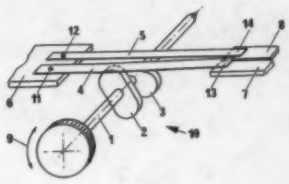
1. In a multi-alarm electronic watch having an oscillator generating a high frequency time standard signal, a divider circuit dividing down said high frequency standard signal, timekeeping means accumulating said divided signals in a plurality of time units, liquid crystal display means for display of said accumulated timekeeping signals, the improvement therein comprising:
an alarm circuit, said alarm circuit capable of being simultaneously and selectively set for a plurality of alarm times;
means for actuating said alarm circuit at each time corresponding to a set alarm time;
liquid crystal display means for simultaneous display of said plurality of set alarm times, signals from said alarm circuit causing said simultaneous display, said display means for simultaneous display providing a visible time schedule of said plurality of set times in the form of a grid matrix,
said time schedule display means including a first group of electrodes, said first group of electrodes being divided into rows, and a second group of electrodes, said second group of electrodes being divided into columns, said rows and columns being transverse one to the other, the overlapped portions of said transverse electrodes forming picture elements in said grid matrix,
said columns representing hours and said transverse rows representing portions of an hour in minutes, each selectable alarm time having a unique fixed location on said grid matrix, selected alarm times being indicated by an ON condition of said display at said respective fixed locations, non-selected alarm times being in an OFF condition at said respective fixed locations.

4,379,642

APPARATUS FOR THE SELECTION OR CORRECTION OF DATA IN AN ELECTRONIC WATCH

Clement Meyrat, LeLanderon, Switzerland, assignor to Ebauches, S.A., Switzerland

Filed Feb. 9, 1981, Ser. No. 232,864
Claims priority, application Switzerland, Feb. 13, 1980, 1161/80
Int. Cl.³ G04C *9/00*; G04B *29/00*
U.S. Cl. 368—188 **7 Claims**



1. Apparatus for the selection or the correction of data in an electronic watch provided with a rotatable spindle, the apparatus comprising commutation means operated by the rotation of the spindle in one direction or the other and arranged to produce two series of commutation pulses which are phase-displaced with respect to each other, the sign of the phase displacement depending on the direction of rotation of the spindle, and a circuit responsive to the series of commutation pulses to provide a signal indicating the direction of rotation of the spindle and to produce selection or correction pulses, the commutating means comprising two cams mechanically coupled to the rotatable spindle and angularly displaced one with respect to the other and two resiliently flexible strips of electrically conductive material each of which cooperates with a respective one of the cams and has one fixed end and one free end, the free end of each strip being alternately brought in contact with and moved away from a respectively fixed contact during the rotation of the spindle.

4,379,643

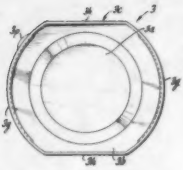
TIMEPIECE CASE/BACKCOVER ASSEMBLY

James J. Halicho, Sunnyvale, Calif., assignor to Timex Corporation, Waterbury, Conn.

Filed Jul. 24, 1981, Ser. No. 286,423
Int. Cl.³ G04B *37/00, 29/00*
U.S. Cl. 368—309 **14 Claims**

1. In a timepiece construction, the combination of:
(a) a case having a first engagement surface with a polygonal plan profile composed of a plurality of first circular arc surface portions having a common center point and a plurality of first noncircular surface portions connecting the first circular arc surface portions together, and
(b) a back cover member having a second engagement surface with a polygonal plan profile composed of a plurality of second circular arc surface portions having a common center point and a plurality of second noncircular surface portions connecting the second circular arc surface por-

tions together, the second circular arc surface portions being adapted for snap-fitting against the respective first



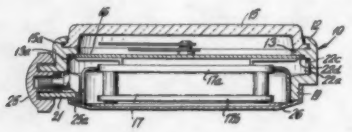
circular arc surface portions to hold the back cover member and case releasably together.

4,379,644

TIMEPIECE CASE/DIAL PLATE ASSEMBLY

David F. Capolupo, Oakville, and James J. Donnelly, Wolcott, both of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Jun. 8, 1981, Ser. No. 271,499
Int. Cl.³ G04B 37/00
U.S. Cl. 368—314 2 Claims



1. In a timepiece, the combination of:

a. a non-circular dial plate having a first plan dial plate dimension and second plan dial plate dimension, and

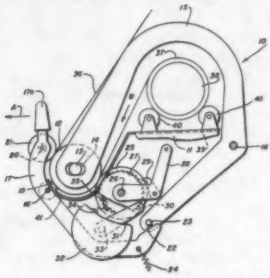
b. a case for housing the dial plate, said case having a rear surface with a projecting wall defining an access opening, an inner wall defining an interior chamber in communication with the access opening and a front wall defining an annular seat extending into the chamber and on which the dial plate rests in the chamber, said access opening having a first plan dimension larger than the corresponding first plan dial plate dimension and a second plan dimension smaller than the corresponding second plan dial plate dimension such that the dial plate is oversized in the second plan dimension, said case having an undercut portion in the direction of the second plan dimension of said access opening defining a maneuvering recess for the dial plate, whereby the second plan dimension of said dial plate can be inserted through the access opening by tilting the dial plate relative to the access opening and inserting a portion of the dial plate along the second plan dimension in the maneuvering recess to thereby accommodate the oversize in the second plan dimension and allow the remainder of the dial plate along the second dimension to be pivoted through the access opening.

4,379,645

LARGE FORMAT PAPER HANDLING ASSEMBLY FOR TYPEWRITERS OR LIKE BUSINESS MACHINES

Gunter Scheinpflug, Nuremberg, Fed. Rep. of Germany, assignor to Triumph-Adler A.G. für Büro-und Informationstechnik, Nuremberg, Fed. Rep. of Germany

Filed Oct. 21, 1981, Ser. No. 313,461
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1981, 3108262
Int. Cl.³ B41J 15/06
U.S. Cl. 400—623 2 Claims



1. A large format paper handling assembly for association with a printing element movable in escapement and carriage return directions comprising

a frame

platen support arms pivotably mounted on said frame,

a platen having its ends rotatably and translatably mounted between said support arms,

frame mounted guide rollers and rearwardly spaced feed rollers for rotatably supporting said platen,

paper feed release lever means pivotably mounted on the axis of said guide rollers,

paper hold down rollers supported on said paper feed release lever means for engaging said platen, and

means on said paper feed release lever means for rocking said support arms incident to movement of said paper feed release lever means to a release position to move said platen support arms and said platen from engagement with said guide and feed rollers.

4,379,646

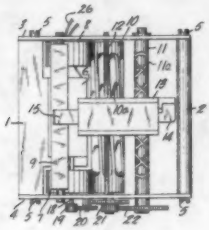
PAPER FEED ROLL ROTATED BY PRINT HEAD CARRIER MOVEMENT

Katsutoshi Maeda, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Mar. 24, 1980, Ser. No. 133,144
Claims priority, application Japan, Mar. 26, 1979, 54-35378; Sep. 4, 1979, 54-122082[U]
Int. Cl.³ B41J 13/02
U.S. Cl. 400—636 7 Claims

1. A printer comprising: a platen; a print head positioned opposite said platen; a print head driving shaft having a bidirectional cam-groove and oriented parallel to said platen; means on said print head for engaging said bidirectional cam-groove to effectuate reciprocating movement of said print head parallel to said platen in response to rotation of said driving shaft; and paper feeding and positioning means for feeding paper between said print head and said platen and for positioning the paper to be printed on, said paper feeding and positioning means comprising a paper feeding roller having a middle portion and a pair of end portions, said print head and said paper feeding roller middle portion together comprising means for rotating said paper feeding roller through a predetermined angular interval each time said print head travels from one end of said platen to another in one particular direc-

tion, a pair of paper receiving rollers each disposed opposite a respective one of said paper feeding roller end portions, said paper receiving rollers and corresponding ones of said paper feeding roller end portions receiving therebetween, in use, paper to be printed on and which is advanced up to said platen by rotation of said paper feeding roller with the paper gripped between said paper feeding roller end portions and said paper receiving rollers, wherein said paper feeding roller end portions have respective diameters larger than a diameter of said



paper feeding roller middle portion, and means comprising a guide surface for guiding paper to advance between said paper feeding roller and said paper receiving rollers, wherein said means comprising a guide surface is comprised of a plate-like member disposed between said paper feeding roller end portions opposite said paper feeding roller middle portion and spaced from said paper feeding roller middle portion a distance less than the difference between the radius of said paper feeding roller middle portion and said paper feeding roller end portions.

4,379,647

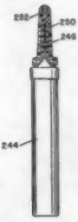
OPTICAL COMPARATOR AND INSPECTION APPARATUS

Paul S. Kempf, 703 Stratford Ct., Apt. 7, Del Mar, Calif. 92104, assignor to Paul S. Kempf, Solana Beach, Calif.

Continuation of Ser. No. 117,230, Jan. 30, 1980, abandoned, which is a continuation of Ser. No. 944,890, Sep. 22, 1978, abandoned, which is a continuation of Ser. No. 706,675, Jul. 19, 1976, abandoned, which is a division of Ser. No. 568,866, Apr. 17, 1975, abandoned, which is a division of Ser. No. 190,187, Oct. 18, 1971, Pat. No. 3,888,593. This application Aug. 27, 1981, Ser. No. 297,037

Int. Cl.³ B43K *9/00*

U.S. Cl. 401—262 **1 Claim**



1. A marking pen comprising:

a resilient tubular container for a fluid marking medium;

an elongated nozzle having a central bore, said bore being substantially coextensive with said nozzle;

said nozzle having a substantial uniform exterior and interior cross-sectional area along substantially its entire length and being connected directly to the body of said container;

said bore communicating with the interior of said container;

cap means having an elongated socket for fitting closely about said nozzle over substantially the entire length of said nozzle and said bore, for producing a pumping action upon said cap being pushed along the length of said nozzle, for forcing said fluid marking medium into said container, completely expelling said marking medium and sealing said container, the volume of said socket being greater than the volume of said central bore of said nozzle, whereby said bore is completely evacuated when said nozzle is fully inserted into said socket;

said elongated socket having a substantially uniform cross-sectional area along its length.

4,379,648

FIXING STRUCTURE FOR RADIATOR GRILLE

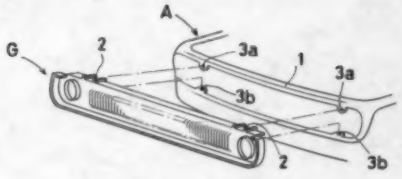
Shinken Tanaka, Tokyo, and Takuo Yuda, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd. and Nifco Inc., both of Yokohama, Japan

Filed Jan. 14, 1981, Ser. No. 225,028

Claims priority, application Japan, Jan. 21, 1980, 55-4497[U]

Int. Cl.³ F16B *19/00*

U.S. Cl. 403—24 **4 Claims**



1. A fixing structure for fastening a radiator grille to the fitting portion of an automobile body, comprising a fixture part formed on the radiator grille and a plastic fastener composed of a base plate, a first attaching member formed on one side of said base plate and adapted for attachment to said fixture part and a second attaching member formed on the other side of said base plate and adapted for snapping engagement with a fixing hole in the fitting portion of the automobile body part, said fixture part being composed of a plate member incorporating therein a retaining step and lateral walls disposed one each along the opposite edges of said plate member, and said first attaching member being composed of a base plate, an engaging arm extended from said base plate and provided at the leading end thereof with an engaging claw adapted for engagement with said retaining step in said fixture part, and a pair of pinching members extended from said base plate parallelly to both sides of said engaging arm and adapted to squeeze the lateral walls of said fixture part after completion of engagement between the fixture part and the plastic fastener.

4,379,649

CONNECTOR SYSTEM FOR GEODESIC DOME STRUTS

Martha E. Phillips, 3906 Ridgecroft Rd., Baltimore, Md. 21206

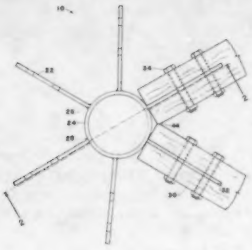
Filed Oct. 1, 1981, Ser. No. 307,377

Int. Cl.³ E04B *1/58*

U.S. Cl. 403—172 **1 Claim**

1. In a connector system for geodesic dome struts, said connector being of the type having a hub with members radiating therefrom in the form of a plurality of peripherally-spaced arms having connection in swept-back-angle relation to a plane through the hub perpendicular to the axis of the hub, said struts having structure forming attachment-apertures in respective ends thereof, the improvement comprising: means permitting connection of a said arm at any location around the hub including each hub being a right-cylinder in configuration with each arm swept-back angle being defined by an angle of said arm at the point of said connection to the hub, each arm being a plate-like member in a plane generally parallel with the axis of

said right cylinder, the diameter of each hub being sufficiently greater across than the width of a said strut affixable thereto to provide for abutting termination of said strut on the hub, the



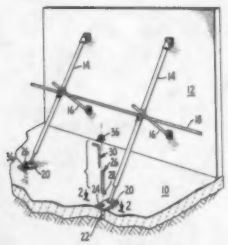
ratio of hub-diameter to strut width being substantially one and three-quarters to one for a said connector with six arms uniformly spaced around the periphery of the hub, and said connection being welded connection.

4,379,650

ANCHORING MEANS FOR WALL BRACES

David J. Frankenfield, Burlingame, Calif., assignor to The Burke Company, San Mateo, Calif.

Filed Sep. 2, 1980, Ser. No. 183,724
Int. Cl.[3] F16B *35/04*
U.S. Cl. 403—316 7 Claims



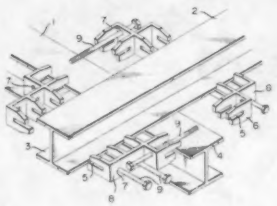
1. In a bracing system for tilt-up wall slabs including a floor slab-engaging foot plate to which a tilt-up brace is pivotally attached, the combination with said foot plate of a cylindrical bore formed in a floor slab and extending fully therethrough, an aperture in said foot plate in registry with said bore, a threaded anchor bolt having at least one side which is essentially flat and unthreaded removably extending through said aperture and fully through said bore, said bolt having an abbreviated foot portion extending laterally into underlying relation to the floor slab, the horizontal dimension of said bolt taken through said foot portion being somewhat less than the diameter of said bore to enable emplacement of said bolt through said bore and removal of said bolt therefrom, an anchor bolt-wedging spike removably extending fully through said bore and against said essentially flat and unthreaded side of the bolt to maintain said bolt to one side of said bore and to maintain said foot portion in underlying relation to the floor slab, said spike having a right-angled head portion at its upper end adapted to engage the upper surface of the floor slab and to be disposed within said aperture of said foot plate, and a nut bearing against the foot plate in removably threaded engagement with said anchor bolt and operable while in place to prevent the removal of said spike from said aperture and said bore.

4,379,651

METHOD FOR RELEASABLY RIGIDLY FASTENING TWO INTERSECTED OVERLAPPING METAL PROFILES AND MEANS THEREFOR

Masaya Nagashima, 4-6, Takayanagi 3-chome, City of Kisarazu, Chiba Prefecture, Japan

Filed Nov. 17, 1980, Ser. No. 207,407
Claims priority, application Japan, Jul. 7, 1980, 55-91789
Int. Cl.[3] B25G *3/36;* E04G *7/00*
U.S. Cl. 403—387 4 Claims



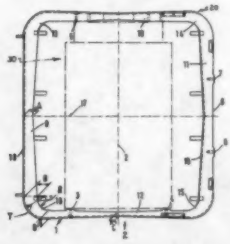
1. A means for releasably rigidly fastening two metal beams intersecting at an angle and lying one upon another, consisting essentially of four L-shaped members each having two vertical sides intersected at one end of each so as to make an angle corresponding to the angle made at the respective corners of said intersection of said metal beams, said sides of each of said L-shaped members being formed on their outer faces with grooves respectively adapted to receive therein the respective edge portions of the lower and upper parts of said metal beams at said respective corners of said intersection, and a number of fastening means adapted to rigidly connect said sides of said L-shaped members protruding above or below said lower and upper parts of said metal beams so as to confront each other.

4,379,652

CLOSED ONE-PIECE ROLLER FRAME FOR VIBRATOR ROLLERS

Heinz Buchmann; Bruno Mayer, both of Bochum, and Wolfgang Szybowicz, Erkrath, all of Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Sep. 23, 1980, Ser. No. 190,040
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2940048
Int. Cl.[3] E01C *19/38*
U.S. Cl. 404—117 6 Claims



1. A vibrator roller assembly and frame comprising a vibrator roller with a horizontal axis of rotation and an unbalance generator, a closed angular one-piece vibrator roller frame member having a pair of side portions, a pair of end portions and four corner portions connected between said side portions and said end portions respectively, said axis of said vibrator roller connected between said end portions so that static and dynamic forces are transferred from said vibrator roller to said

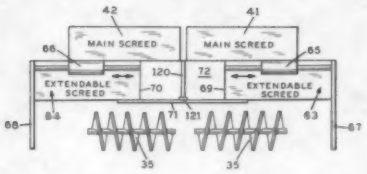
frame member, said four corner portions being internally and externally rounded, said side portions having increasing widths from a median axis of said frame extending perpendicularly to said axis of rotation, said end portions having increasing widths from said axis of rotation, and from the median and horizontal axes to each corner portion, each side and end portion being trapezoidal in shape.

4,379,653

ASPHALT PAVER WITH TELESCOPING SCREED

Robert L. Brown, Mattoon, Ill., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jun. 1, 1981, Ser. No. 269,383
Int. Cl.³ E01C *19/22*
U.S. Cl. 404—118 17 Claims



1. A screed assembly for a floating screed asphalt paving machine, which comprises

(a) first and second main screed units, each including a front plate and a sole plate,

(b) screed extension units for each of said main screed units, each including a front plate and a sole plate,

(c) means for mounting said screed extension units in front of said main screed units, with the front plates of said extension units being positioned a substantial distance forwardly of the main screed units and the sole plates of said screed extension units extending rearwardly substantially to the front plates of said main screed units,

(d) said mounting means including, for each said extension unit, a pair of spaced guide rods mounted on said screed extension units and extending laterally substantially from one end to the other thereof, and a pair of guide sleeves slideably engaging said guide rods,

(e) said guide sleeves forming part of a support bracket assembly mounted at the front of a main screed unit,

(f) means for effecting vertical adjustment of said support bracket assembly relative to the main screed or screed extension unit, whereby to effect vertical adjustment of said screed extension unit with respect to the main screed unit,

(g) controllable positioning means for effecting controlled lateral extending and retracting movements of the screed extensions, and

(h) clearing means for preventing the accumulation of excessive amounts of paving materials between said screed extensions during retracting movements while paving, such that extending or retracting adjustments of said screed extension units may be effected at any time.

4,379,654

DEVICE FOR KEEPING A LINING-LAYER IN CONTACT WITH THE WALLS OF A CIVIL-ENGINEERING WORKS

Giuseppe Rovelli, Turin, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Feb. 19, 1981, Ser. No. 236,218
Claims priority, application Italy, Mar. 12, 1980, 20513 A/80
Int. Cl.³ B65G *5/00*; E21D *11/00*
U.S. Cl. 405—53 9 Claims

1. A device for maintaining a flexible liner in contact with the walls of an excavation in the earth comprising a plurality of frames spaced one from the other and disposed in planes which are substantially perpendicular to the larger dimension of the excavation, said frames comprising a double series of rods, means hinging the rods of each series together in a cascade-connection, means hinging the first rods of each series to each other at one end, and to the wall, an elastically deformable member hinged to the ends of the last rods of the series, and at

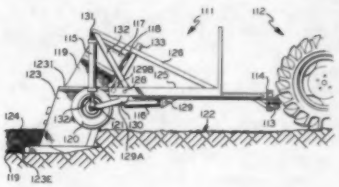
least one rod intermediate said first and last rods hinged to the immediately preceding rod at a point intermediate of its length and hinged to the rod that follows in each series at its ends, and resilient means for drawing apart the double series of rods.

4,379,655

PROCESS AND APPARATUS FOR LAYING A SUBTERRANEAN FILM

Robert L. Brost, Independence, Kans., and Duane W. Gagle, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 30, 1980, Ser. No. 202,098
Int. Cl.³ E02F *5/10*; F16L *1/02*
U.S. Cl. 405—176 22 Claims



1. Apparatus for laying a strip of film under the surface of the soil comprising:

a hollow plow having a film inlet above the soil surface and a film outlet adapted to be below the soil surface when the plow is moving through the soil;

a source of film;

means for passing film from the source of film into the film inlet, through the hollow plow, and out the film outlet under the soil surface while the plow is moving through the soil; and

first means adjacent the film outlet of the hollow plow for supporting the film under the soil after passing the film out of the film outlet under the soil.

4,379,656

BUOYANCY CONTROL VALVE FOR SCUBA DIVING VESTS

Phillip H. Darling, 15711 Williams #173, Tustin, Calif. 92680

Continuation of Ser. No. 815,735, Jul. 14, 1977, abandoned, which is a continuation-in-part of Ser. No. 691,658, Jun. 1, 1976, abandoned. This application Dec. 11, 1978, Ser. No. 968,625
Int. Cl.³ B63C *11/02*
U.S. Cl. 405—186 33 Claims

23. A valve for use in combination with a buoyancy compensation vest and breathing air tanks, both carried by a diver, for controlling the buoyancy of said diver, comprising:

a housing fluidly connected to said vest, said housing being an open-ended cylindrical member and said housing including an exhaust port;

a valve closing said exhaust port, said valve being a cup-shaped member having a side opening, said cup-shaped member telescoping over one end of said cylindrical housing;

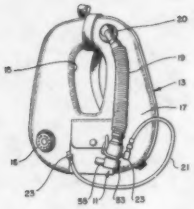
means biasing said valve to a closed position against said exhaust port, said means permitting automatic opening of said valve in response to a predetermined pressure differential between the interior of said housing and its surroundings to prevent overpressurization of said vest; and

an actuator for manually opening said valve.

27. Apparatus for selectively forcing gas in two opposite directions in a conduit, comprising:

a source of pressurized gas;

first means mounted in said conduit, connected to said source of pressurized gas, admitting gas from said source to said conduit in a first direction and utilizing the Coanda effect for forcing gas in said first direction in said conduit; and



second means, independent of said source of pressurized gas, for selectively blocking flow in said first direction in said conduit, said second means forcing said gas simultaneously admitted from said source to said conduit through said first means to reverse and flow in a second direction opposite said first direction.

28. A small, portable, hand-held respirator valve, comprising:

a main flow conduit;

means connecting said main flow conduit to a breathing passage of an animal;

a valve connected to a source of high pressure gas, said valve selectively admitting gas to said flow conduit in a first direction away from said connecting means to entrain air and exhaust the lungs of said animal; and

means independent of said gas source for selectively blocking the flow of gas simultaneously admitted from said souce through said valve to reverse and flow in a second direction toward said connecting means.

4,379,657

RISER TENSIONER

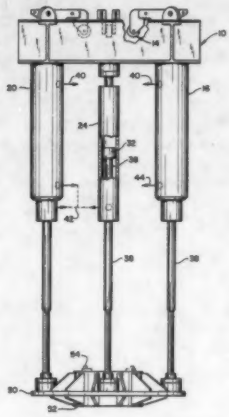
Karl J. Widiner, Carpinteria, Calif., and Riley G. Goldsmith, Houston, Tex., assignors to Conoco Inc., Ponca City, Okla.

Filed Jun. 19, 1980, Ser. No. 161,235

Int. Cl.[3] **B63B** *35/44*

U.S. Cl. 405—195 **2 Claims**

1. A portable modular riser tensioner for supporting risers from a floating platform comprising: a mounting frame having peripheral supports for supporting said frame from the platform and a central opening; a riser tensioning ring having a central opening and means for supporting a riser within said central opening of said riser tensioning ring; at least two pairs of cylinders, one of each of said pair of cylinders being diametrically opposed to the other of said pair; a piston having a rod end slideable in each of said cylinders; at least two oil accumulators; at least two air accumulators; said cylinders, said oil accumulators and said air accumulators all connected to one of said mounting frame and said tensioning ring; said piston connected to the other of said mounting frame and said tensioning ring through said rod ends; an upper portion of each of said air accumulators in fluid communication with an upper portion of a corresponding oil accumulator; and a lower end of an oil



accumulator in fluid communication with a corresponding pair of said diametrically opposed cylinders at the rod end of said piston.

4,379,658

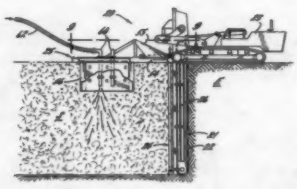
METHOD AND APPARATUS FOR CONSTRUCTING SLURRY WALLS

Fred C. Schmednecht, LaPorte, Ind., assignor to Thatcher Engineering Corporation, Gary, Ind.

Filed Dec. 3, 1980, Ser. No. 212,691

Int. Cl.[3] **E02D** *5/20*

U.S. Cl. 405—267 **10 Claims**



1. An apparatus for constructing a slurry wall in a trench comprising, in combination:

a. a trencher including driving means and a trenching column, the trenching column having a digging chain to excavate soil to form a trench as the trencher is advanced;

b. a slurry isolation means disposed immediately behind the trenching column, the slurry isolation means adapted to slidingly engage the opposite side walls of the trench from the ground level to the bottom of the trench; and

c. trailing means towed by the driving means and including (i) plow means extending rearwardly and outwardly with respect to both sides of the trench from a point just behind the digging chain in close proximity to the slurry isolation means for displacing the excavated soil laterally away from the formed trench and (ii) slurry injection means for introducing slurry material into the trench behind the slurry isolation means whereby a slurry wall may be constructed simultaneously with the excavation of the trench,

and the slurry isolation means prevent the slurry from entering the area of influence of the digging chain.

4,379,659

BUILDING BLOCKS

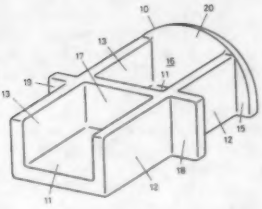
Alfred Steiner, Andelfingen, Switzerland, assignor to Steiner Silidur A.G., Andelfingen, Switzerland

Filed Nov. 19, 1980, Ser. No. 208,217

Claims priority, application Switzerland, Sep. 5, 1980, 6698/80; Sep. 5, 1980, 6699/80

Int. Cl.³ E04C *2/04*

U.S. Cl. 405—284 11 Claims



1. A shaped hollow building block comprising in combination, a base wall, side walls, and a face wall having the form of a shield standing perpendicularly to the base wall, having on both sides a margin projecting relative to the side walls and having a height greater than that of the side walls, the side walls and the base wall jointly forming an elongate trough in a direction normal to the face wall, and a transverse wall extends parallel to the face wall in the trough for dividing the inside of said building block into compartments, one of which is open at the rear of the building block opposite said face wall and at the top of the building block opposite said base wall, and the other of which is located between said one compartment and said face wall and is also open at the top of the building block opposite said base wall, with said side walls laterally delimiting both said one compartment open at the rear and said other compartment between said one compartment and the face wall.

4,379,660

METHOD OF AND APPARATUS FOR APPLYING MAT TO THE ROOF OF A MINE WORKING

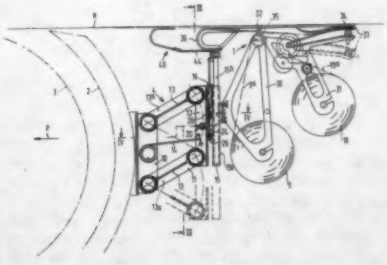
Karl M. Groetschel, Montsalvatstrasse 1a, D-8000 München, Fed. Rep. of Germany

Filed Sep. 3, 1980, Ser. No. 183,825

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936206

Int. Cl.³ E21D *19/00*

U.S. Cl. 405—288 14 Claims



1. In a method of applying a succession of strips to the roof of an underground mine working in a manner such that each successive strip is applied along a previously uncovered zone of the roof bordering the last applied one of the previously applied strips, and with the nearer edges of these two strips in proximate relation to each other, the improvement comprising

a. sensing the lateral position of a previously applied one of said strips,

b. controlling the lateral position of each newly applied strip, as it is undergoing application, in accordance with said sensed lateral position to establish the required proximate relation between the nearer edges of newly applied strip and the last applied strip respectively,

and wherein

c. application of each of said newly applied strips of mat is effected at a lateral position determined by the lateral position of a transporter means on which a mat applying means for applying the strips is carried, and which travels longitudinally of the zone in which the newly applied strip is required to be applied,

d. the position of the mat applying means is laterally adjusted relatively to that of said transporter means in accordance with the sensed lateral position of said previously applied strip, and in a direction and by an amount such as to compensate for lateral deviation of said transporter in travelling along said zone and which would otherwise cause said proximate edges to be spaced apart or to overlap by more than a predetermined amount.

4,379,661

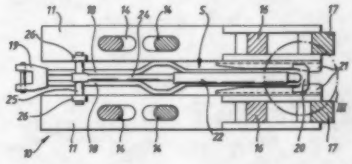
ADVANCE MECHANISM FOR A MINE ROOF SUPPORT UNIT

Egon Wojaczek, Hamm-Bockum-Hoevel; Mustafa Soliman, Lunen, and Juergen Schulte, Hamm, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Sep. 9, 1980, Ser. No. 185,638

Int. Cl.³ E21D *23/08*

U.S. Cl. 405—299 13 Claims



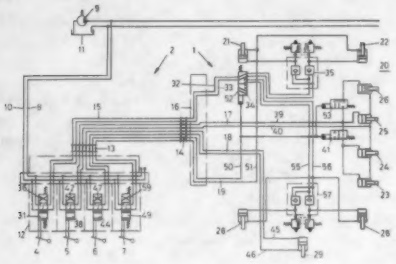
1. An advance mechanism for a roof support unit having a pair of spaced floor girders (**11**), the advance mechanism comprising a hydraulic advance ram (**22**) and a pair of generally parallel relay rods (**18**), one end of each of the relay rods being connected to a head-piece (**19**) configured for attachment to a longwall conveyor, the other end of each of the relay rods being attached to a guide element (**20**) which is slidably guided by guide rails (**21**) attached to the mutually-facing sides of the floor girders, the hydraulic advance ram being pivotally attached to the guide element and to the floor girders, alignment means being provided for aligning the ends of the floor girders remote from the head-piece when the hydraulic advance ram is pressurised, wherein the guide rails are formed with inclined guide surfaces (**21c**), and the guide element is provided with abutment means (**27**) engageable with the guide surfaces, said alignment means including the guide surfaces and the abutment means, and the guide surfaces being positioned adjacent said ends of the floor girders remote from the head-piece.

4,379,662

CONTROL DEVICE FOR AN ADVANCING SUPPORT IN UNDERGROUND MINING

Siegmar Block, Essen, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Jun. 29, 1981, Ser. No. 278,075
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024116
Int. Cl.³ E21D 23/18
U.S. Cl. 405—302 8 Claims



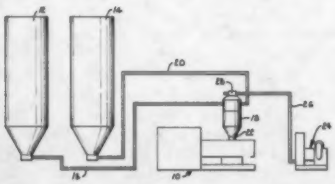
1. An improved control device for an underground mining working support unit arrangement having hydraulic supports for supporting several load points, means for admitting a hydraulic working medium to the hydraulic supports, the admitting means including an adjacent support unit arrangement hydraulically connected to a working support unit arrangement, a control block having control valves and control conduits connected to the adjacent support unit arrangement for connecting the hydraulic supports for supporting the load points with the control valves, and each of the conduits having a nominal diameter which permits direct control of the hydraulic supports for supporting the control points, the improved control which comprises means for connecting the hydraulic supports for supporting several load points successively over the same control conduits to the control valves of the adjacent support unit arrangement, said connecting means including reversing valves connected to the hydraulic supports of the working unit support arrangement and the conduits and over which the hydraulic supports for supporting the load points are connectable.

4,379,663

VACUUM SEQUENCING SYSTEM WITH WEIGHT CONTROLLED MATERIAL DRAW CYCLE

Robert Allison, Sabetha, Kans., assignor to Mac Equipment, Inc., Sabetha, Kans.

Filed Sep. 22, 1980, Ser. No. 189,673
Int. Cl.³ B65G 53/66
U.S. Cl. 406—23 10 Claims



1. In a vacuum sequencing system having first and second storage containers for holding granular plastic material and the like, a receiver for receiving the material from the containers and discharging the material in batches through an outlet of the receiver, first and second conduits extending from the respective first and second containers to the receiver to deliver the material therebetween, vacuum means for applying a vacuum to the receiver to draw the material through the conduits from the containers to the receiver, a ratio valve for opening and closing the first and second conduits to control the relative amounts of material loaded into the receiver from the first and second containers, and a dump valve operable when activated to interrupt the vacuum to thereby interrupt the material flow through the conduits and effect discharge of the material in the receiver through the outlet thereof, the improvement comprising:

a frame supporting the receiver in a manner permitting the receiver to deflect generally downwardly when material is loaded therein;

switch means for activating the dump valve when the downward deflection of the receiver reaches a first predetermined level, thereby effecting discharge of a batch of material from the receiver when the weight of the batch is sufficient to effect said first predetermined level of deflection of the receiver and

second switch means sensitive to downward deflection of the receiver to a second predetermined level which is less than the first predetermined level, said second switch means being operable when deflection of the receiver is less than said second level to maintain the ratio valve in a first condition wherein the first conduit is open and the second conduit is closed, and when deflection of the receiver exceeds said second level to maintain the ratio valve in a second condition wherein the first conduit is closed and the second conduit is open,

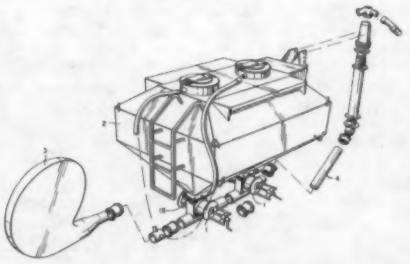
whereby material is loaded into the receiver from the first container when the deflection of the receiver is less than said second level and from the second container when the deflection of the receiver is between said second level and said first level.

4,379,664

SEED CUP ASSEMBLY

Merv V. Klein; Dan W. Kelm, and Salah U. Din, all of Winnipeg, Canada, assignors to Prasco Super Seeder Ltd., Winnipeg, Canada

Filed Sep. 23, 1980, Ser. No. 189,565
Claims priority, application Canada, Jul. 11, 1980, 356042
Int. Cl.³ B65G 53/46
U.S. Cl. 406—68 1 Claim



1. A seed cup assembly for use with a pneumatic seeding system and adapted for attachment to the underside of a pressurized hopper, comprising in combination a discharge casing; a conduit secured to and in communication with the lower end of said casing and adapted for insertion into the pneumatic system; a rotatable shaft extending transversely through said casing; a metering component journalled for rotation by said shaft and communicating with said casing and providing passage for granular material between said hopper and said conduit; said metering component being adjustably positioned within said casing for controlling the quantity of granular

material transferred from the hopper to the conduit; said metering component comprising a cylindrical body having a plurality of elongated flutes thereon, said flutes engaging material within the hopper and depositing said material into the conduit as the metering component rotates within the casing; means sealing the fluted cylinder of the assembly with an adjacent wall of the casing; means for moving the fluted metering component along said shaft to increase the exposure of the fluted surface to the inside of the casing, said metering component including an elongated portion of reduced diameter extending concentrically outwards from the cylindrical fluted boday; and a cylindrical slider freely and coaxially mounted on said elongated portion adjacent to said fluted cylinder and providing sealing means with the adjacent wall of the casing; means sealing the fluted cylinder comprising a cylindrical housing of greater diameter than said fluted cylinder, one end wall of said housing being secured to said rotatable shaft whereby the cylindrical housing is coaxially positioned over the portion of the fluted cylinder extending through the casing wall; and a disc shaped member at the other end of said cylindrical housing and having a peripheral outer surface providing the seal against the casing wall, and an inner surface profiled to match the fluted surface of the metering cylinder.

4,379,665

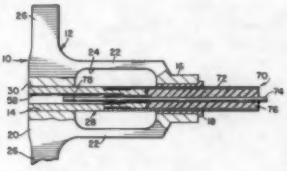
INSULATION STRIPPER FOR COAXIAL CABLE

Homer Hendershot, Cogan Station, and Charles M. Storrs, Williamsport, both of Pa., assignors to Lemco Tool Corporation, Cogan Station, Pa.

Filed Nov. 24, 1980, Ser. No. 209,600

Int. Cl.³ B23B *51/04*

U.S. Cl. 408—204 **10 Claims**



1. An insulation stripping tool for coaxial cable having a body with cable alignment means at one end and a stripping bit at the other end axially aligned with the means, the bit including a cutting end adjacent to the means with an insulation cutting edge and a sleeve stop surface away from the means, wherein the improvement comprises an axial bore extending into the bit from the cutting end and an insulation carrying flute on the surface of the bit extending longitudinally along the bit from the cutting edge past the sleeve stop surface, the cutting edge facing in the direction of stripping rotation of the tool, said flute including a bottom surface extending from one side of the bit past the bit axis and a side wall extending from the bottom wall to the surface of the bit, the side wall including a section extending longitudinally along the bit and a curved section at the cutting end of the bit running from one end of the longitudinal section to the cutting edge whereby upon stripping rotation of the tool and feeding of the bit into an end of a coaxial cable held by the means the cutting edge severs a strip of insulation from between the central conductor and the surrounding conductive sheath and the flute carries the strip away from the cutting edge, axially along the bit and outwardly the cable without jamming while the central conductor is fed into said bore.

4,379,666

APPARATUS FOR MANUFACTURE OF JIGS

John A. Rose, Knaresborough, and Keith Dyer, Leeds, both of England, assignors to AMF Incorporated, White Plains, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,291

Claims priority, application United Kingdom, Sep. 19, 1979, 7932472

Int. Cl.³ B23C *1/16*

U.S. Cl. 409—110 **6 Claims**

1. Apparatus for the manufacture of multiple plate jigs for use in sewing, comprising

a top plate with a contoured outer periphery;

mounting means adapted to removably support in predetermined spatial relationship a work piece of bottom plate material and said top plate above and parallel to the work piece;

forming means for contouring a work piece to form a bottom plate with a contoured periphery and for forming a contoured slot thereby separating the bottom plate into inner and outer portions:

a pair of feeler means each being arranged to move independent of the other along the periphery of said top plate;

one of said feeler means being operatively connected to guide said forming means when contouring the outer periphery of a bottom plate; and

the other of said feeler means being operatively connected to guide said forming means when forming a contoured slot in a bottom plate.

4,379,667

CHUCK FOR MACHINE TOOLS

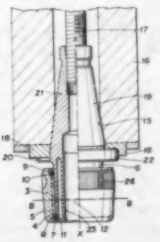
Hisanari Yoshimoto; Taka Tonomura, and Takuo Takamura, all of Toyama, Japan, assignors to Kabushiki Kaisha Fujikoshi, Toyama, Japan

Filed Oct. 23, 1980, Ser. No. 199,813

Claims priority, application Japan, Nov. 8, 1979, 54-154183[U]

Int. Cl.³ B23C *1/00*; B23B *31/04*

U.S. Cl. 409—234 **9 Claims**



1. A needle-roller type chuck for machine tools comprising:

a chuck body having a longitudinal axis and a leading end portion;

a chuck barrel integral with the leading end portion of said chuck body and extending axially therefrom, said chuck barrel having a leading end portion, an outer peripheral conically tapered surface and a plurality of holes circumferentially distributed about said axis and extending from the leading end of said chuck barrel toward said chuck body;

a rotatable clamping ring positioned over said chuck barrel, said clamping ring having an inner conical surface extending in the axial direction of said chuck body and parallel with the outer peripheral surface of said chuck barrel;

a needle roller assembly having a predetermined axial length, said assembly comprising a plurality of needle rollers positioned between said chuck barrel and said clamping ring in rotatable contact with the conically tapered surface of said chuck barrel and conical surface of said clamping ring; and

the axial length of each of the plurality of holes corresponding substantially to the predetermined axial length of the needle roller assembly.

4,379,668

LOCKING DEVICE FOR SECURING CARGO IN A VEHICLE

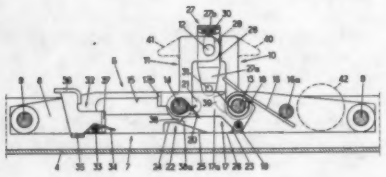
Robert Pelletier, Le Perreux, France, assignor to Pelletier Exploitation, Aubervilliers and Siren, Versailles, both of, France

Filed Feb. 24, 1981, Ser. No. 237,700

Claims priority, application France, Feb. 26, 1980, 80 04242

Int. Cl.³ B60P *7/08*

U.S. Cl. 410—77 **14 Claims**



1. A locking device for securing cargo in a vehicle, comprising:

a frame (7) comprising two first members (8) joined together by two second cross members (9) and capable of being fixed to the floor of the vehicle space intended to accommodate the cargo;

a first latch (10) and a second latch (11) hinged together at one of their ends by a common transverse pivot pin (12), said first latch (10) having at its non-hinged end a transverse hinge pin (13) mounted in a fixed position between said first members (8), and said second latch (11) having at its non-hinged end a transverse hinge pin (14) guided in translation in longitudinal slideways (15) in said first members (8);

means for changing said first and second latches (10, 11) from a cargo unlocking position, in which said latches are retracted down into said frame and said transverse hinge pins (13, 14) are separated to a cargo locking position, in which said first and second latches (10, 11) project above said frame (7) and said transverse hinge pins (13, 14) are brought near to each other;

spring means for drawing said first and second latches (10, 11) from the cargo unlocking position to the cargo locking position; and

first blocking means for blocking said first and second latches (10, 11) in the cargo unlocking position and second blocking means for blocking said first and second latches (10, 11) in the cargo locking position, respectively.

4,379,669

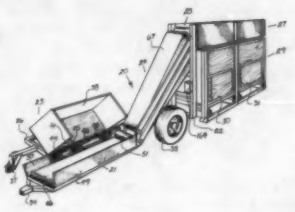
TOBACCO HANDLING APPARATUS

Robert W. Wilson, Charlotte, N.C., assignor to Powell Manufacturing Company, Inc., Bennettsville, S.C.

Continuation of Ser. No. 949,407, Oct. 10, 1978, abandoned, which is a continuation of Ser. No. 629,974, Nov. 7, 1975, abandoned. This application Nov. 17, 1980, Ser. No. 207,288

Int. Cl.³ A01D *45/16*

U.S. Cl. 414—21 **24 Claims**



1. Tobacco leaf handling apparatus for facilitating the loading of tobacco leaves into successive bulk curing structures each of which includes a plurality of parts movable with respect to one another between a tobacco leaf receiving and loading position and a tobacco leaf supporting and curing position, said apparatus being operable to transfer harvested tobacco leaves from a source into contained relation with successive parts of successive tobacco curing structures positioned with an area having a substantial horizontal extent, said apparatus comprising

conveyor means adapted to receive harvested tobacco leaves from a source and arranged for discharging the leaves from an end thereof with a force sufficient to propel the leaves through the air along and to the end of a flow path above said area having a greater horizontal extent than the horizontal extent of said area,

means for supporting successive curing structure parts within said area in a position below said flow path so that discharged tobacco leaves flowing in said path are available to be moved downwardly out of said path into contained relation with respect thereto,

tobacco leaf deflecting means mounted above said part supporting means within said flow path for generally horizontal cyclical movements in the direction of extent of said flow path,

means for effecting continuous cyclical movements of said deflecting means,

said tobacco leaf deflecting means including leaf engaging surface means open in a horizontal direction toward the discharge end of said conveyor means operable during the cyclical movement of said leaf deflecting means to intercept by engagement therewith successively available leaves propelled through the air along the flow path at different horizontal positions determined by the position of cyclic movement of said leaf deflecting means when engagement occurs so as to effect a substantially uniform distribution of the leaves in the direction of extent of the flow path with respect to said part supporting means therebelow.

4,379,670

LINEAR POCKET LETDOWN DEVICE

James G. Hannoosh, Sudbury; Andrew C. Harvey, Waltham; John C. Harding, Sudbury, and Ram Chandrasekhar, Framingham, all of Mass., assignors to Foster-Miller Associates, Inc., Waltham, Mass.

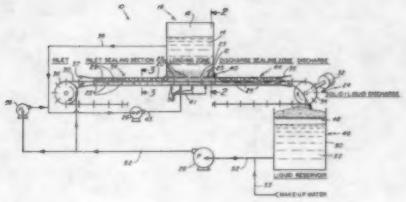
Filed Jul. 7, 1980, Ser. No. 166,151

Int. Cl.³ C10J *3/52*

U.S. Cl. 414—217 **19 Claims**

1. A system for removing solid material from the bottom of

a pressure vessel and discharging the solids to ambient conditions without relieving the vessel's pressure comprising a tube having an inlet end and an outlet end and connected intermediate its ends to the bottom of the pressure vessel for receiving the material from the vessel, a conveyor having a course which travels through the tube, motor means connected to the conveyor for driving it along its course, pocket means defined by consecutive pairs of pistons carried by the conveyor for conveying the material received in the tube from the vessel and carrying the material to the outlet of the tube, labyrinth seals formed by the pistons in the tube both upstream and downstream of the vessel for preventing vessel pressure loss through the inlet and outlet ends of the tube, a small annular clearance being formed between the pistons and the tube, and means for introducing liquid into the pockets at the inlet end of the tube upstream of the vessel, said liquid cooperating with the pistons to form moving labyrinth seals upstream of said vessel.



4,379,671

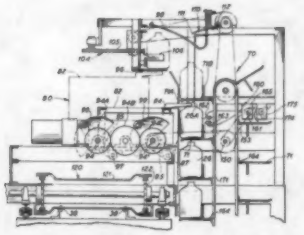
SYNCHRONIZED BOTTLE UNLOADING SYSTEM

Donald D. Cochran, Bartlett, Ill., assignor to National Can Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 909,617, May 26, 1978, abandoned. This application Jan. 18, 1980, Ser. No. 113,271

Int. Cl.³ B65G *43/10*

U.S. Cl. 414—331 **5 Claims**



1. In an article unloader system having a carrier for holding articles arranged in a stack of shelves, each shelf containing rows of articles, means for intermittently simultaneously unloading only the forwardmost rows of articles from said carrier, an elevator means having a plurality of flights respective to receive the unloaded rows of articles for intermittently transporting the unloaded rows of articles, a transfer mechanism being driven in circular motion cycles for removing the unloaded rows of articles a row at a time as each said flight reaches a predetermined point of travel and passing each said removed row of articles onto a conveyor means, a common drive source, and corresponding drive transmission means extending from said drive source for simultaneously intermittently driving said elevator means and said transfer mechanism, the improvement comprising:

a synchronization control means for regularly detecting the rate of movement of said elevator means at least once every cycle of said transfer mechanism and adjusting the speed of said elevator means to bring said elevator means back into synchronization with said transfer mechanism whenever movement of said elevator means is out of correlation with said transfer mechanism.

4,379,672

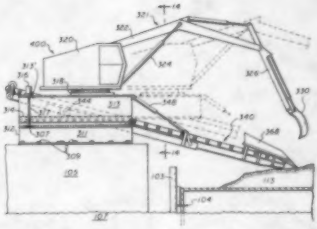
COMBINATION HANDLING AND CONVEYING APPARATUS

Roy D. Hunter, 2829 Texas Ave., Texas City, Tex. 77590

Filed May 12, 1980, Ser. No. 148,822

Int. Cl.³ B65G *41/00, 65/04, 67/60*

U.S. Cl. 414—565 **12 Claims**



1. An apparatus for off-loading and handling loose materials from a vessel, comprising

a base structure,

a generally inverted U-shaped chassis adapted for limited lateral movement with respect to said base structure, said chassis comprising

a pair of spaced beams mounted for horizontal sliding movement with respect to said base structure,

engaging means cooperating with said base structure and pair of spaced beams for engaging said base structure and pair of spaced beams and permitting said horizontal sliding movement of said pair of beams with respect to said base structure, and

frame means attached to and spanning said pair of spaced beams for forming an upper frame structure,

drive means for moving said chassis with respect to said base structure,

a platform rotatably mounted on said upper frame structure of said chassis,

means for horizontally rotating said platform with respect to said upper frame structure of said chassis,

an elongated articulated boom means mounted on said platform for rotation therewith and for longitudinal extension beyond said chassis, said boom means having a free extending end,

longitudinally extendable conveyor means suspended within said

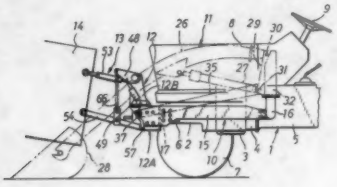
generally inverted U-shaped chassis below said platform and adapted for limited arcuate vertical movement with respect thereto, said conveyor means having a loading end projecting from said chassis and movable to a position in contact with the loose material for cooperating with said free extending end of said boom means, and

material handling means disposed on said free extending end of said boom means and cooperating with said conveyor means loading end for loading the materials into said conveyor means.

4,379,673
ARRANGEMENT FOR ATTACHING WORKING IMPLEMENTS TO VEHICLE

Sadayuki Takahashi; Yorio Komeda; Matsuo Tachibana, and Kenkichi Nosaka, all of Sakai, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Aug. 20, 1981, Ser. No. 294,796
Claims priority, application Japan, Aug. 26, 1980, 55-121694[U]
Int. Cl.³ E02F 3/72
U.S. Cl. 414—686 7 Claims

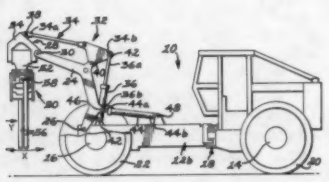


1. An arrangement for attaching working implements to a vehicle comprising a pair of side frames provided on the opposite sides of the body of the vehicle and extending longitudinally thereof, the side frames having mount portions for attaching to the vehicle body a front loader with a pair of booms liftable on the opposite sides of the vehicle body, each of the side frames being provided at its front end with an upright frame extending upward in front of the bonnet of the vehicle and including a mount member at the base portion thereof and an upright member removably attached to the mount member, the side frames and the upright frames being provided with a front three-point linkage for attaching a front working implement to the vehicle body and with lift cylinders for lifting or lowering the front working implement by the front three-point linkage.

4,379,674
LOAD SKIDDING VEHICLE HAVING A POSITIONALLY BIASED GRAPPLE

Thomas C. Meisel, Jr., and Robert J. Price, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00950, § 371 Date Jul. 13, 1981, § 102(e) Date Jul. 13, 1981
PCT Filed Jul. 13, 1981, Ser. No. 292,099
Int. Cl.³ B66C 1/32
U.S. Cl. 414—699 9 Claims

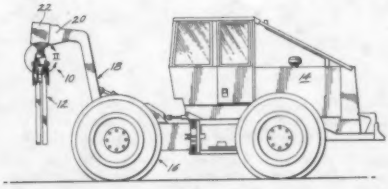


1. A load skidding vehicle (10) comprising:
a vehicle chassis (12);
a boom (24) mounted on said chassis (10);
means (28) connected to said boom (24) for releasably grasping loads, said grasping means (28) being movable between an open, load releasing configuration and a closed, minimum opening load grasping configuration, said grasping means (28) including
a pair of relatively movable tongs (56); and
a fluid grapple ram (58) having a grasping cylinder (58*b*) and a grasping piston (58*a*) displaceably disposed in said grasping cylinder (58*b*), said grasping piston (58*a*) being connected to one of said tongs (56) and said grasping cylinder (58*b*) being connected to said other tong (56), said grasping piston (58*a*) dividing said grasping cylinder (58*b*) into a third (58*c*) and a fourth (58*d*) fluid tight portion;
means (32) for displacing said grasping means (28) to a predetermined position between a rearwardly extending position and a forwardly extending position relative to said chassis (12), said displacing means (32) including
a fluid equalizer ram (36) constituting a cylinder (36*b*) and a piston (36*a*) displaceably disposed in said cylinder (36*b*), said piston (36*a*) dividing said cylinder (36*b*) into a first (36*c*) and a second (36*d*) fluid tight portion, said piston being connected to said grasping means (28) and said cylinder being joined to said chassis (12);
selectively actuatable first means (66,68,70,72,78,62′,68′) for continually biasing said displacing means (32) with a predetermined biasing force toward a selected load skidding position, said first biasing means (66,68,70,72,78,68′) permitting displacement of said grasping means (28) away from said load skidding position in response to load-induced forces greater than said biasing force, said first biasing means (66,68,70,72,78,62′,68′) including
a fluid reservoir (66);
means (68,68′) for supplying pressurized fluid at a discharge pressure;
means (70,72,62′) for providing fluid communication from said pressurized fluid supply means (68,68′) to said first cylinder portion (36*c*) when said biasing force is desired; and
means (78,62′) for providing fluid communication between said second cylinder portion (36*d*) and said reservoir (66) when said biasing force is desired; and
second means (74,96,64′) for biasing said tongs (56) toward said closed, minimum opening load grasping configuration with a predetermined grasping force.

4,379,675
DAMPENED FULLY PIVOTAL HANGER FOR A GRAPPLE

John R. Muntjanoff, Aurora, and Dennis M. Day, Hinckley, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01647, § 371 Date Dec. 4, 1980, § 102(e) Date Dec. 4, 1980
PCT Filed Dec. 4, 1980, Ser. No. 270,533
Int. Cl.³ B66C 1/00
U.S. Cl. 414—734 14 Claims



1. A dampened pivotal hanger assembly (10) adapted to be fixed to a supportive structure (14), comprising:
a main mounting member (24) attachable to the supportive structure (14), said main mounting member (24) having two support portions (28) a spaced distance apart;
mounting means (30) attached to each support portion (28);
a pair of first pivoting members (32), each of said first pivoting members (32) being connected to a corresponding one of said mounting means (30) and being pivotable with respect to said support portions (28);
crossmember means (38) joining the first pivoting members

(32) one to the other, said crossmember means (38) supporting two horizontally spaced pivot pins (44);

a pair of second pivoting members (48), each of said second pivoting members (48) being attached to a corresponding one of said second pivot pins (44) and being pivotable with respect to said first pivoting members (32);

first extendable-retractable dampening means (60) connected between said main mounting member (24) and at least one of said first pivoting members (32) for resisting pivoting of said first pivoting members (32); and

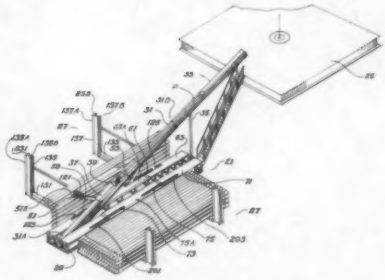
second dampening means (68) connected between said crossmember means (38) and at least one of said second pivoting members (48) for dampening pivoting of the second pivoting members (48) relative to said crossmember means (38) wherein said main mounting member (24), said first pivoting members (32) and said second pivoting members (48) define a central, substantially vertically extending recess (71).

4,379,676

PIPE HANDLING SYSTEM

Robert Frias, Odessa, Tex., assignor to Ingram Corporation, New Orleans, La.

Filed Feb. 27, 1980, Ser. No. 125,162
Int. Cl.[3] E21B 19/14
U.S. Cl. 414—748 25 Claims



1. An apparatus for transferring lengths of pipe between a pipe handling apparatus and a pipe rack located on one side of the pipe handling apparatus comprising:

a first arm member having first and second ends, said first end being pivotally connected to said one side for pivotal movement about a first axis;

a second arm member having first and second ends, said first end being pivotally connected to said one side for pivotal movement about a second axis,

said first axis and said second axis being generally parallel and positioned generally on the same horizontal plane,

a first lug means rotatably attached to said first arm member generally at said second end and extending towards said pipe rack,

a second lug means fixedly attached to said second arm member generally at said second end and extending towards said pipe rack,

said first lug means and said second lug means being capable of supporting a length of pipe, and

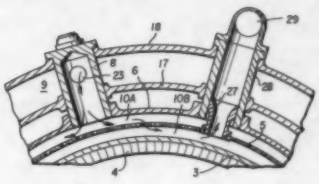
a pivoting means connected to said first arm member and to said second arm member for pivoting said first arm member about said first axis and said second arm member about said second axis.

4,379,677

DEVICE FOR ADJUSTING THE CLEARANCE BETWEEN MOVING TURBINE BLADES AND THE TURBINE RING

Claude C. Hallinger, and Robert Kervistin, both of Le mee sur Seine, France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.", Paris, France

Filed Oct. 7, 1980, Ser. No. 194,890
Claims priority, application France, Oct. 9, 1979, 79 25028
Int. Cl.[3] F01D 11/00, 11/08
U.S. Cl. 415—175 8 Claims



1. A device for adjustment of the clearance between the blades and circumferentially continuous monoblock ring of a turbine, comprising:

an inner sleeve having a seal gasket mounted thereto,

a perforated, cylindrical partition encompassing the sleeve and fastened thereto;

a peripheral wall forming a distribution chamber for the air which heats or cools the ring,

an opposite wall;

an enclosure formed by said inner sleeve which supports said seal gasket, and said opposite wall; and

a plurality of tubular elements radially connecting said enclosure to the distribution chamber and ensuring the passage of heating or cooling air from the distribution chamber to the enclosure,

wherein said inner sleeve and partition are circumferentially continuous and wherein said opposite wall has bore holes for receiving one end of the tubular elements, further comprising an exhaust pipe and tubular exhaust elements, each of said exhaust elements further comprising an end opening into the enclosure and including a nozzle operatively associated with an opening provided in the perforated partition, each of said exhaust elements also including an end opening to the outside of the distribution chamber and means for connecting with said exhaust pipe.

4,379,678

INDIVIDUAL BLADE CONTROL

Gaylord W. Carlock, Joshua; Jimmy G. Garner; Charles M. Gatlin, both of Hurst; Kenneth F. Guinn, Fort Worth, and Peter A. Reyes, Watauga, all of Tex., assignors to Textron, Inc., Providence, R.I.

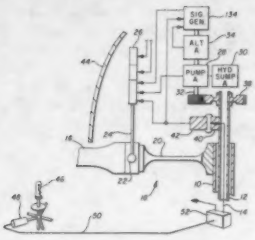
Filed Oct. 7, 1980, Ser. No. 194,804
Int. Cl.[3] B64C 27/74
U.S. Cl. 416—98 19 Claims

1. Apparatus for individually controlling each blade of a rotor that rotates with a mast which drives the rotor through a rotating hub, the improvement comprising:

a plurality of blade actuators mounted to rotate with the hub and individually coupled to a rotor blade for control thereof;

a plurality of power packages mounted to rotate with the rotating hub, each power package individually actuated

by rotation of the hub to provide actuator power and control signals; and



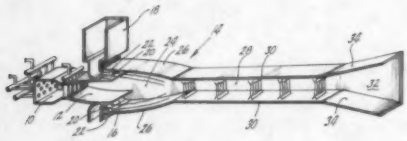
control channels for connecting the actuator power and control signals from each power package to each blade actuator to control blade pitch.

4,379,679

SUPERSONIC/SUPERSONIC FLUID EJECTOR

Roy N. Guile, Wethersfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 1, 1980, Ser. No. 211,613
Int. Cl.³ F04F 5/46
U.S. Cl. 417—54 **4 Claims**



1. In an ejector of the type for pumping a supersonic velocity, ejector driven medium to a higher pressure, the improvement comprising:

means for generating a multiplicity of weak shock waves extending into the driven medium at an acute angle to the direction of flow for compressing the driven medium at supersonic velocities including at least one first driving medium nozzle capable of discharging an ejector driving medium laterally of and parallel to the driven medium at a supersonic velocity greater than the supersonic velocity of the driven medium and at a static pressure above the static pressure of the driven medium.

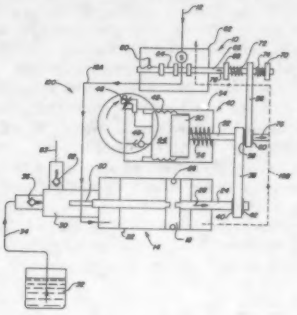
4,379,680

AMBIENT AIR TIMING DEVICE

William L. Barry, Houston, Tex., assignor to Vapor Corporation, Chicago, Ill.

Continuation of Ser. No. 68,728, Aug. 22, 1979, Pat. No. 4,302,159. This application Jun. 18, 1981, Ser. No. 274,787
The portion of the term of this patent subsequent to Nov. 24, 1998, has been disclaimed.
Int. Cl.³ F04B 49/00
U.S. Cl. 417—46 **4 Claims**

1. A fluid timer for a reciprocating pump wherein said pump includes a housing, a reciprocating piston mounted in said housing and a piston rod secured to said piston, said timer comprising a bellows, said bellows including a moveable wall for varying the fluid volume in said bellows, control means for controlling the rate of fluid flow into and out of said bellows, a supply fluid directional control valve for directing fluid to said pump housing on a selected side of said piston for reciprocating said piston, first lost motion connecting means for connecting said wall and said piston rod for allowing independent movement between said wall and said piston rod during at least a portion of a first stroke of said piston, and second lost motion connecting means connecting said wall to said fluid directional valve for allowing independent movement between said wall



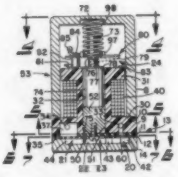
and said fluid directional valve during at least a portion of a second stroke of said piston.

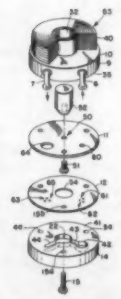
4,379,681

FLUID PUMP WITH DUAL DIAPHRAGM CHECK VALVES

Paul R. Goudy, Jr., 8920 Hampton Ave., Milwaukee, Wis. 53225, assignor to Paul R. Goudy, Jr., Shorewood, Wis.; Bruce J. Landis, Sunrise, Fla. and Kenneth J. Landis, University Heights, Ohio

Filed Jan. 4, 1980, Ser. No. 109,547
Int. Cl.³ F04B 21/02, 39/10, 43/04
U.S. Cl. 417—560 **3 Claims**





1. A fluid pump comprising a fluid inlet and a fluid outlet; a pumping chamber; an inlet check valve means for passing fluid flow from said fluid inlet to said pumping chamber and for blocking fluid flow from said pumping chamber to said fluid inlet; an outlet check valve means for passing fluid flow from said pumping chamber to said fluid outlet and for blocking fluid flow from said fluid outlet to said pumping chamber; pumping means for drawing fluid from said fluid inlet via said

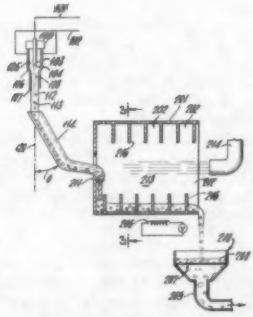
inlet check valve into said pumping chamber and for pumping fluid from said pumping chamber via said outlet check valve to said fluid outlet; at least one of said inlet and outlet check valve means comprising a self-sealing check valve assembly, including a first relatively rigid member having a plate-like surface and bounded by boundary portions of said surface; a second relatively rigid member having a plate-like surface and a fluid passage means opening at said plate-like surface of said second relatively rigid member and bounded by boundary portions of said plate-like surface of said second relatively rigid member; flexible means positioned between said plate-like surfaces for cooperating with said boundary portions to provide a substantially fluid-tight seal therewith; and said flexible means including movable means for moving upon flexure of said flexible means in response to a pressure differential across said flexible means, said movable means including means operative when said flexible means moves substantially to opposite extreme positions thereof to block fluid flow between said fluid passage means and to permit such fluid flow, respectively; said flexible means having plural flexible parts each having a resilient characteristic, one of said parts having a surface area portion for blocking fluid flow through at least one of said inlet check valve means and outlet check valve means in response to one directional pressure differential thereacross and being capable of permitting fluid flow through said at least one check valve means in response to an opposite direction pressure differential thereacross, and the other of said parts having an opening aligned with at least one of said fluid passage means and with said surface area of the one of said parts, said opening being adequately large to permit flexible deformation of said other part into said opening.

4,379,682

REACTION APPARATUS FOR THE FORMATION OF MICROSPHERES OR MICROCAPSULES

Peter J. Natale, Canton, and Igino Lombardo, Sharon, both of Mass., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Apr. 29, 1981, Ser. No. 258,715
Int. Cl.³ B29C *23/00*
U.S. Cl. 425—10 **5 Claims**



1. Microparticle formation apparatus for use in a system of microparticle formation from a flowing stream of a core liquid ejected from the exit of a vibrating nozzle concurrently and coaxially into a flowing stream of a sheath liquid forming a composite liquid stream wherein droplets formed of said core liquid within said sheath liquid are formed into microparticles, said formation apparatus further comprising:

(a) a drum having a substantially horizontal longitudinal axis therethrough, said drum defining an inlet end and an outlet end and forming a cavity between said inlet and outlet ends, and an internal spiral channel means extending between said inlet and outlet ends;

(b) mixing means intermittently spaced within said channel means to provide turbulence in the flow of said composite liquid stream from said inlet end to said outlet end; and

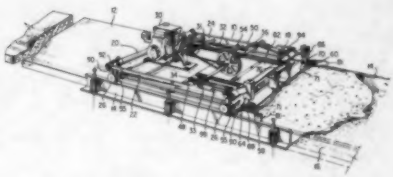
(c) means for rotating said drum about said longitudinal axis.

4,379,683

CONCRETE FORMING APPARATUS

Stuart N. Rodgers, and Sidney J. Voycheshin, both of 7605 - 115 St., Delta, British Columbia, Canada (V4C 5M9)

Filed May 14, 1980, Ser. No. 149,726
Int. Cl.³ E01C *19/38*
U.S. Cl. 425—62 **14 Claims**



1. Apparatus for forming, compacting and finishing the top surface of concrete poured between a pair of removable longitudinally extending parallel opposed forms, said apparatus comprising:

(a) a frame having forward and rearward ends which extend transversely between opposed first and second sides of said frame, said ends and said sides substantially defining a plane;

(b) a wooden concrete pre-finishing member disposed along the forward end of said frame, said member having a lower surface configured to vary in vertical distance from said plane along the transverse axes of the forms, and said member being relatively wide when measured in the direction of longitudinal extension of the forms;

(c) vibrator means affixed to said frame for causing vibration of said member;

(d) a finishing pan rigidly affixed beneath said frame to the rear of and adjacent said member and extending between said first and second sides of said frame and configured to vary in vertical distance from said plane along the transverse axes of the forms;

(e) transporting means on said first side of said frame and transporting means on said second side of said frame for engaging said frame on top of the forms and permitting movement of the apparatus along the forms with said ends extending transversely of the forms and with said member extending transversely between the forms; and,

(f) propulsion means affixed to said frame for propelling the apparatus along the tops of forms whereby poured concrete beneath the apparatus is formed, compacted and finished to a depth which varies along transverse axes of the forms;

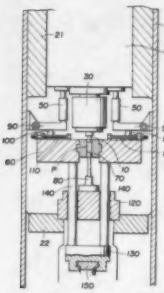
said member having a portion of said lower surface shaped to define a semi-conical recess in regions of relatively abrupt change in said vertical distance, the apex of said recess lying at the rearward edge of said lower surface and the base of said recess lying along the forward edge of said lower surface.

4,379,684

PRESS FOR POWDER METALLURGY

Takeshi Katagiri, Machida, and Takakazu Tsuchifuji, Tokyo, both of Japan, assignors to Yoshizuka Seiki Co., Ltd., Kawasaki, Japan

Filed Jun. 11, 1981, Ser. No. 272,679
Claims priority, application Japan, Jun. 13, 1980, 55-79853
Int. Cl.³ B30B 11/02
U.S. Cl. 425—78 3 Claims



1. A press for powder metallurgy comprising:
a frame;
a die holder mounted on said frame for movement with respect to said frame;
an open-ended die mounted in said die holder;
a lower punch fixed with respect to said frame and forming the bottom of said die;
an upper punch movable with respect to said frame and insertable into said die to form the top thereof;
an upper ram for vertically moving said upper punch into said die at a first rate of speed;
poke rods vertically movable by said upper ram;
levers pivotally connected to and extending inwardly from said frame and having head portions positioned vertically below said poke rods so that said head portions are contacted and pivoted downwardly by said poke rods;
screw threaded rods carried by said die holder and spaced above the upper surfaces thereof; and
receiving pieces translatable along said threaded rods by rotation of said rods, said receiving pieces being positioned vertically below said levers so that said receiving pieces are contacted by said levers when said levers are pivoted downwardly by said poke rods whereby said die is moved downwardly at a rate of speed determined by the positions of said receiving pieces on said rods to thereby subject material in the die to compressive forces simultaneously acting on both the top and bottom surfaces of material in the die.

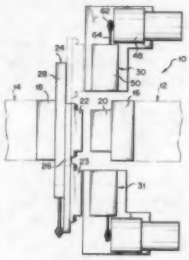
4,379,685

INJECTION MOLDING MACHINE

Tetsuya Tada, Tokyo, and Yutaka Morishita, Shiki, both of Japan, assignors to Canyon Corporation, Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,405
Claims priority, application Japan, Feb. 5, 1980, 55-12676
Int. Cl.³ B29F 1/00
U.S. Cl. 425—183 2 Claims

1. An injection molding machine comprising:
a fixed die and a movable die defining cavities therebetween;
a die clamping mechanism coupled to said fixed and movable dies for clamping and separating said fixed and movable dies, said die clamping mechanism being movable in a horizontal direction;
an injection mechanism for heating and melting molding material and for injecting the molten material into said cavities defined by said fixed die and said movable die;
a fixed platen provided near said injection mechanism and to which said fixed die is attached;
a movable platen provided near said die clamping mechanism and to which said movable die is attached;
a slider provided on said movable platen and which is reciprocably slideable in a horizontal direction different from the horizontal direction in which said die clamping mechanism is movable;
said movable die and another movable die being attached to said slider so as to alternately come into face-to-face relation with said fixed die as said slider reciprocates;
a pair of product collecting mechanisms respectively disposed on both sides of said fixed die, and arranged to face one of said movable dies which is not facing said fixed die, each of said pair of product collecting mechanisms including:



a product collecting main body having first and second body portions, said first body portion being slideably mounted to said second body portion;
a plurality of first hollow shafts rotatably mounted on said first body portion, said first hollow shafts having respective center bores and being arranged such that a threaded product in said movable die is inserted in a center bore of each said first hollow shafts to be taken out of said movable die; and
a plurality of second hollow shafts as many as said first hollow shafts rotatably mounted to said second body portion, each second hollow shaft having a center bore through which said threaded product can pass;
said first and second hollow shafts having end faces which face each other; and
a power source coupled to said second hollow shafts for rotating each of said second hollow shafts so that facing end faces of said first and second hollow shafts selectively come into contact with each other to selectively frictionally transmit force therebetween.

4,379,686

APPARATUS FOR MOLDING A RECORDED DISC

Robert W. Chambers, Willingboro, N.J.; Michael L. McNeely, and Leslie A. Torrington, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 187,161, Sep. 15, 1980, which is a continuation-in-part of Ser. No. 146,379, May 5, 1980, abandoned. This application Feb. 24, 1982, Ser. No. 352,000
Int. Cl.³ B29D 17/00
U.S. Cl. 425—290 7 Claims

1. In an apparatus for molding a recorded disc which includes a pair of mold plates adapted to form therebetween a disc mold cavity, and a center hole forming pin movable in one of the mold plates toward and away from the other mold plate at the center of the mold cavity, the improvement comprising:
said center hole forming pin being larger in diameter than the hole to be formed and having a cylindrical projection extending from its end surface which is of the diameter of the

hole to be formed, the projection being of a length such that when the end of the projection mates with the other mold

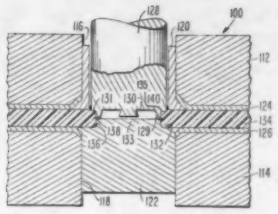


plate to form the hole in the disc, the end surface of the pin around the projection forms an extension of a surface of the mold cavity.

4,379,687

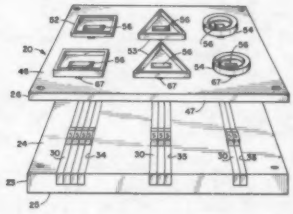
MOLD APPARATUS

Robert E. Wilson, 6116 W. Karen Lee La., Glendale, Ariz. 85306, and Dan Mickelson, 2930 W. Orangewood, Phoenix, Ariz. 85017

Continuation of Ser. No. 160,820, Jun. 18, 1980, abandoned. This application Mar. 6, 1981, Ser. No. 241,249

Int. Cl.³ B29C *17/03*

U.S. Cl. 425—388 **8 Claims**



4. A mold apparatus including in combination, a base member having first and second spaced surfaces, said base member having at least one air duct extending between said first and second spaced surface thereof, a mold member having first and second spaced surfaces, said second surface of said mold member being located adjacent said first surface of said base member, said first surface of said mold member having at least one mold configuration about which material is adapted to be molded, said mold member having a die receiving opening in said mold configuration extending therethrough to said second surface of said mold member, a die member residing in said die receiving opening, indicia means carried on said die member and located within said mold configuration to reproduce said indicia means on the material which is adapted to be molded about the mold configuration, and air evacuation openings extending between said first and second surfaces of said mold member and being in fluid communication with said at least one air duct to evacuate air from said mold configuration.

4,379,688

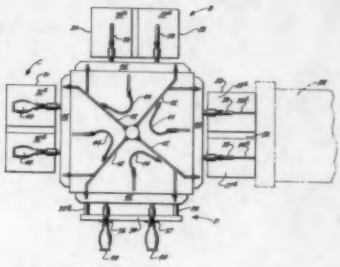
ORIENTED INJECTION BLOW MOLDED CONTAINER PRODUCTION

Dennis J. Tate, Grand View, and Henry Trevino, Kansas City, both of Mo., assignors to Ethyl Development Corporation, Richmond, Va.

Filed Sep. 14, 1981, Ser. No. 301,834

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—526 **11 Claims**



1. An apparatus for producing injection blow molded biaxially oriented plastic articles from plastic parisons comprising:

a. a frame member;

b. a transport table mounted to said frame member for rotational movement about and reciprocally along the central axis of said transport table;

c. a table power means associated with said transport table for effecting said rotational and reciprocal movements;

d. at least one transversally extending hollow core rod fixedly mounted on said table, said rod having a longitudinally extending hollow portion and said rod having first sealing means at its distal end;

e. an elongated stretch pin movably mounted in said hollow portion and said stretch pin having,

i. at its distal end second sealing means for cooperation with said first sealing means to achieve a seal between said first and second sealing means,

ii. first locking means in mounted relationship with the proximate end of said stretch pin, and

iii. first engagement moving means associated with said stretch pin whereby movement of said first engagement moving means causes movement of said stretch pin in said hollow portion;

f. a second locking means mounted to said transport table for cooperation with said first locking means to lock said stretch pin from movement when said stretch pin is in the position within said hollow portion to achieve said seal between the said first and second sealing means;

g. a second engagement moving means movably mounted to said frame member for engagement with said first engagement moving means when said transport table is in its lowered position at the blow molding station of (h);

h. a power means for moving said second engagement moving means when it is in said engagement with said first engagement moving means whereby said movement of said stretch pin in said hollow portion is effected, said seal is broken and the distal end of said stretch pin is moved a distance sufficient to cause axial stretch of said plastic parison carried by said core rod;

i. unlocking means mounted to said frame member for unlocking said lock between said first and second locking means when said transport table is in its lowered position at the blow molding station of (h);

j. an injection molding station adjacent said transport table for receipt of said hollow core rod so that said parison can be injection formed on said hollow core rod; and

k. a blow molding station for blow forming said article from

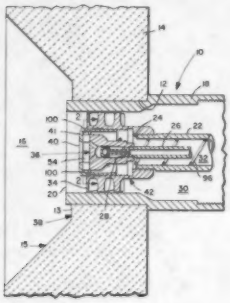
said injection formed parison while said parison is on said hollow core rod, said blow molding station being located adjacent said second engagement moving means and said unlocking means.

4,379,689

DUAL FUEL BURNER

Charles W. Morck, Jr., Philadelphia, Pa., assignor to Selas Corporation of America, Dresher, Pa.

Filed Feb. 13, 1981, Ser. No. 234,357
Int. Cl.[3] F23M 9/00
U.S. Cl. 431—284 10 Claims



1. In a burner mountable in a passageway exiting into a furnace, including:

a. a housing, received by said passageway, opening into said furnace;

b. a first conduit within said housing;

c. a second conduit within said first conduit;

d. means for introducing first fluid between said first and second conduits;

e. means for introducing second fluid into said second conduit;

f. means for introducing third fluid between said housing and said first conduit;

g. means proximate said housing opening, for inducing swirling motion to third fluid discharged from said housing into said furnace;

h. means attached to said first conduit for discharging said first and second fluids into said furnace through said housing opening;

the improvement comprising:

i. said housing opening extending into said furnace;

j. said discharge means being recessed within said housing;

k. said swirl-inducing means being recessed within said housing from said discharge means outlet;

l. said discharge means including:

1. an outer member receiving said first fluid from said first conduit, having an open end facing said housing opening, said outer member about said open end tapering away from said housing opening;

2. an inner member, interior of and spaced from said outer member, receiving said second fluid from said second conduit, including

i. a cavity therewithin communicating with said outer member open end;

ii. passageways therethrough connecting said second conduit with said cavity;

iii. channels therethrough connecting said cavity with said space between said inner and outer members;

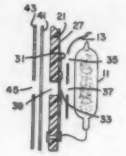
wherein associated channels and passageways communicate with said cavity at a common location.

4,379,690

PHOTOFLASH SWITCHING ARRAY AND FABRICATION UTILIZING SILVER-OXIDE COATED SOLIDS

Michael R. Kling, White Deer, and Carl F. Kackenmeister, Williamsport, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 13, 1981, Ser. No. 292,372
Int. Cl.[3] F21K 5/00
U.S. Cl. 431—359 24 Claims



1. A multilamp photoflash sequential array having at least one radiation-responsive switch including an admixture of a filler material, a binder, silver-coated non-conductive particulate solids and characterized by the improvement wherein said admixture includes silver-salt coated non-conductive particulate solids.

4,379,691

OLIVINE BEDDING MATERIAL FOR SOAKING PITS

Joseph E. Doninger, Lake Forest, Ill., and George D. Hanson, Audubon, Pa., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Oct. 13, 1981, Ser. No. 310,960
Int. Cl.[3] F27D 1/16; C21B 7/04
U.S. Cl. 432—3 9 Claims

6. In an improved method of operating a metal ingot soaking pit having a horizontal bottom, sidewalls and top defining a heating chamber, the improvement comprising covering the bottom of said soaking pit with a layer of a particulate olivine material having an iron oxide content less than about 11% measured as FeO, and having a heat fusion point of at least about 2600° F., said olivine material providing improved handling, uniform thermal insulation and a substantially horizontal uniform supporting bed for metal ingots being carried in said soaking pit, whereby the ingots retain substantially vertical positions during treatment.

4,379,692

METHOD OF DRYING AND PREHEATING MOIST FINE MATERIAL AND APPARATUS FOR CARRYING OUT THE METHOD

Heinrich Weber, Recklinghausen; Kurt Lorenz, Hattingen, and Horst Dungs, Herne, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Recklinghausen, Fed. Rep. of Germany

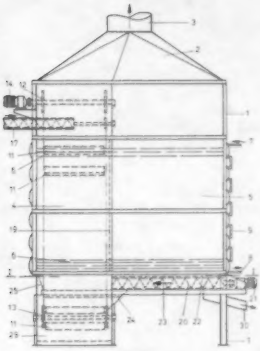
Filed Aug. 3, 1981, Ser. No. 289,235
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1980, 3029398
Int. Cl.[3] F26B 9/12, 3/00, 17/12
U.S. Cl. 432—18 15 Claims

1. A method of drying and preheating moist fine material, in particular bituminous and soft bituminous coal, peat, wood, oil shale, ores or lime stone, in a system having a single open drier chamber with heating means having heating surfaces extending into the drier chamber for indirect heating of the fine material, fine material supplied to a top of the drier chamber being able to fall upon and past the heating surfaces from the top of the drier chamber to a bottom of the drier chamber, the method comprising:

continuously feeding a first amount of moist fine material to the top of the drier chamber above the heating means;

conveying a second amount of predried fine material from the bottom of the drier chamber to the top of the drier chamber;

mixing the second amount of predried fine material with the first amount of moist material at the top of the drier chamber and above the heating means to make a mixture of predried and moist fine material which is fluid;



allowing the fluid mixture to slide down the drier chamber onto and between the heating surfaces and to pile up to a level in the drier chamber above the heating means; and

removing a third amount of predried fine material from a bottom of the drier chamber below the heating means, the third amount equaling the first amount of moist fine material being fed to the top of the drier chamber.

4,379,693

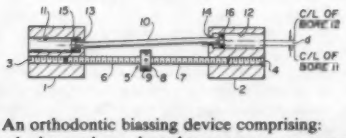
ORTHODONTIC BIASSING DEVICE

Melvin Wallshein, 8645 Bay Pkwy., Brooklyn, N.Y. 11214

Continuation-in-part of Ser. No. 785,587, Apr. 7, 1979, Pat. No. 4,200,979. This application Dec. 17, 1979, Ser. No. 104,310

Int. Cl.³ A61C *3/00*

U.S. Cl. 433—7 **51 Claims**



1. An orthodontic biassing device comprising:

two body members adapted to engage one or more teeth and to be spaced from each other, each of said body members having a threaded bore therein, said threaded bores being oppositely threaded;

an elongated threaded member having externally threaded end portions which are oppositely threaded and which are engageable in said threaded bores of said body members to selectively expand or contract the spacing between said body members;

each of said body members having a first further bore therein which is laterally offset from said threaded bore, said first further bores having respective axes which are non-colinear with each other;

a first elongated member coupled to both of said body members and slideably engaged in said first further bore of said at least one body member and serving as a guide bar for said biassing device;

each of said body members having a second further bore therein which is laterally offset from said threaded bore and which is laterally offset from said first further bore, said second further bores having respective axes, said first and second further bores being located on the same side of said body member, all of said threaded bores and said first and second further bores having axes which lie substantially in a common plane, to permit substantially free access to said elongated threaded member over at least 180°; and

a second elongated member coupled to both of said body members and slideably engaged in said second further bore of at least one of said body members and serving as a second guide bar for said biassing device.

4,379,694

DENTAL IMPLANT

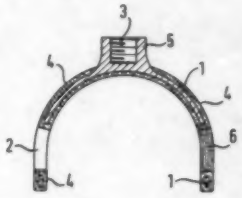
Guido Riess, Garmisch-Partenkirchen, Fed. Rep. of Germany, assignor to Neodontics, Inc., Laguna Niguel, Calif.

Filed Nov. 9, 1978, Ser. No. 959,292

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2824118

Int. Cl.³ A61C *8/00*

U.S. Cl. 433—201 **6 Claims**



1. In a dental implant including a gingiva-compatible metal core member for mounting a dental superstructure in the form of a tooth crown, a fastening element for dental bridges or the like in which the member is connected with a tissue-compatible, biostable polymer matrix having reabsorbable, bioreactive, sintered calcium phosphate, the improvement comprising: said core member being a flat metal plate (1, 11) conformed in shape to said implant and being provided with through-apertures (2, 12) and the polymer matrix is a coating (4, 14) encompassing the metal plate (1, 11) on all sides thereof, and said through-apertures (2, 12) are filled with reabsorbable, sintered calcium phosphate (6, 16).

4,379,695

DENTAL MATERIAL COMPRISING DIMETHYACRYLATE ADDUCTS OF GLYCIDYL METHACRYLATE WITH DIESTERS OF BIS(HYDROXYMETHYL) TRICYCLO[5.2.1.0^{2,6}]DECANE AND DICARBOXYLIC ACIDS

Jan A. Orlowski, Altadena; David V. Butler, West Covina, and Patrick D. Kidd, San Dimas, all of Calif., assignors to Scientific Pharmaceuticals, Inc., Duarte, Calif.

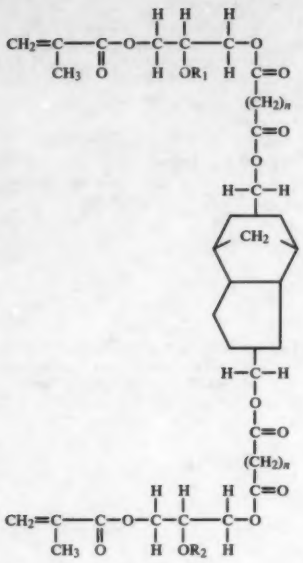
Continuation-in-part of Ser. No. 155,160, Jun. 2, 1980, Pat. No. 4,337,349. This application May 27, 1981, Ser. No. 267,609

Int. Cl.³ A61K *6/08*

U.S. Cl. 433—217 **13 Claims**

1. A dental material comprising polymerizable unsaturated material comprising at least about 10% by weight of a dimethacrylate monomer

having the following chemical structure:



where

n represents a number of 2 to 8;

R_1 and R_2 are the same or different and are hydrogen or one or more groups of the formula:

where

R_3 is an aliphatic group of 1–14 carbon atoms, aromatic group of 6 to 14 carbon atoms or cycloaliphatic group having 3 to 14 carbon atoms and at least one of R_1 and R_2 is

the remainder of said polymerizable material being at least 10% by weight of at least one acrylic or methacrylic monomer acceptable for oral application associated with dental treatment.

4,379,696

LATEX MYLAR CHIP

Stanley Lerner, Highland Park, Ill., assignor to Color Communications, Inc., Chicago, Ill.

Filed Feb. 12, 1981, Ser. No. 233,843

Int. Cl.³ G09F 7/00; A44B 7/00

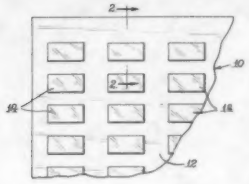
U.S. Cl. 434—98 **12 Claims**

1. A color sample display device capable of being produced with an automated apparatus, said display device comprising a plurality of color swatches consisting essentially of polyethylene terephthalate film having a thickness of from about ¼ mil to about 7 mils, a paint coating on the surface of said film;

an adhesive on said coating or unpainted surface of said film; and

a base sheet with said color swatched adhesively affixed thereto.

5. A color display product capable of being produced with an automated apparatus said display product consisting essentially of a polyethylene terephthalate film base with a thickness of from about ¼ mil to about 7 mils;



a paint coating on one surface of said film base;

an adhesive coating; and

a mount base, said film base being adhesively affixed to said mount base with said adhesive coating being on said painted coating or on said unpainted surface of said film base.

4,379,697

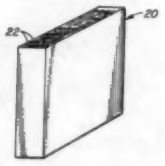
STIMULATOR ARRAY

John G. Linvill, Portola Valley, Calif., assignor to Stanford University, Stanford, Calif.

Filed Oct. 16, 1981, Ser. No. 312,094

Int. Cl.³ G09B 21/00

U.S. Cl. 434—114 **7 Claims**



1. Tactile stimulator apparatus comprising:

a stack of planar sheets of a piezoelectric polymer material, each sheet having two, opposed, broad, flat faces and at least one tactile surface at one longitudinal end,

separate electrodes covering portions of each flat face of the sheets in predetermined patterns which are mirror images of the corresponding electrode patterns of the next adjacent sheet face,

and wherein each of said sheets is polarized in the direction of its tactile end such that upon application of a stimulating voltage of a predetermined magnitude and polarity from an external source across the electrodes of that sheet, the portion of the sheet between the electrodes will longitudinally extend its tactile surface.

4,379,698

ASTROLOGY CHART APPARATUS

George M. Boyd, 1050 S. Beech, Wichita, Kans. 67207

Filed Mar. 25, 1981, Ser. No. 247,389

Int. Cl.³ G09B 29/00

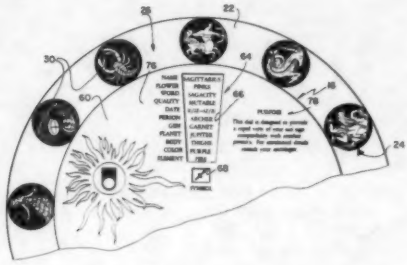
U.S. Cl. 434—106 **9 Claims**

1. An astrology chart apparatus, comprising;

(a) a central base means having a base plate member with central plate indicia means thereon;

(b) a first means pivotally connected to said central base means;

(c) said central base means extended beyond the outer edge of said first means with said central plate indicia means having house picture indicia on said extended portion to identify respective houses of heaven;
(d) said central plate indicia means having house characteristic indicia means underlying said first means, associated with a respective one of said house picture indicia;
(e) said first means includes first indicia means and first window means thereon;
(f) said first indicia means includes characteristic categorizing indicia to be associated with said house characteristic indicia;



(g) said first window means having a characteristic window adjacent said characteristic category indicia, said house charateristic indicia, and said characteristic categorizing indicia;
(h) a second means piviotally connected to said central base means on a side opposite said connection of said first means thereto;
(i) said second means includes second indicia means and second window means;
(j) said central plate indicia means includes sign key word indicia underlying said second means; and
(k) said second window means includes a second key words window for aligning and viewing said sign key word indicia therethrough.

4,379,699

METHOD OF AND MEANS FOR IMPROVED READING EFFICIENCY OF PERSONS WITH SPECIFIC DYSLEXIA

Eileen M. Nelson, 71 Cathryn Ct., Fox Lake, Ill. 60020

Filed Oct. 3, 1980, Ser. No. 193,754
Int. Cl.[3] G09B *17/00*
U.S. Cl. 434—184 15 Claims

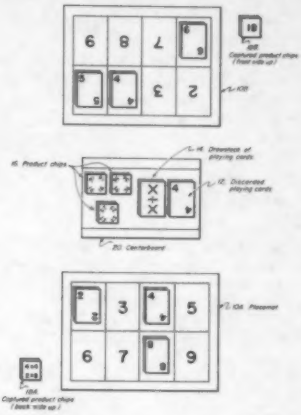
1. The method of increasing the reading efficiency of a dyslexiac suffering from specific dyslexia, comprising providing to such dyslexiac reading material wherein the reading matter comprises a first line of lettering having a brightness substantially less than that of the background on which the lettering is provided, and a second line of similar reading matter adjacent said first line and having a second line of lettering having a brightness substantially greater than that of the background on which the second line of lettering is provided.

4,379,700

MULTIPLICATION/DIVISION TUTORIAL GAME

Clyde Pollock, 42665 Roberts Ave., Fremont, Calif. 94538

Filed May 18, 1981, Ser. No. 264,467
Int. Cl.[3] G09B *19/02;* A63F *1/00*
U.S. Cl. 434—208 10 Claims



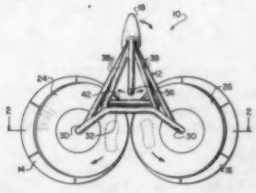
1. A multiplication/division tutorial game comprising:
(a) a plurality of product pieces, each bearing at least one occurrence of multiplication product number such that each product piece represents a different multiplication product, and such that said plurality of product pieces represent a set of multiplication products
(b) a plurality of multiplier-multiplicand pieces, each bearing at least one occurrence of a whole multiplier-multiplicand number such that each multiplier-multiplicand piece represents only a single multiplier or multiplicand, said multiplier-multiplicand pieces comprising all possible multiplier-multiplicand number combinations of a given set of whole numbers which can be multiplied to equal the set of product numbers represented by said plurality of product pieces.

4,379,701

BUOYANT APPARATUS PROPELLED BY A HUMAN OPERATOR

Constant V. David, 4952 Field St., San Diego, Calif. 92110

Filed Mar. 23, 1981, Ser. No. 246,227
Int. Cl.[3] B63H *16/00*
U.S. Cl. 440—21 9 Claims



1. A buoyant apparatus adapted to be propelled by a human operator comprising:
a frame;
a pair of buoyant annular floats;

a pair of annular platforms, each mounted on the upper side of a corresponding float;

a plurality of paddles mounted on the under sides of the floats at circumferentially spaced locations thereon;

means for rotatably mounting the floats to the frame with their rotational axes converging upwardly,

the convergence of the axes and the buoyancy of the floats being such that a person can be buoyantly supported in the water by the apparatus with the outboard portions of the floats raised out of the water sufficiently to result in forward propulsion of the apparatus when the person rotates the adjacent inboard portions of the platforms rearwardly; and

steering means for enabling the person to direct the apparatus through the water, including an elongate buoyant pontoon, means for mounting the pontoon to the frame for rotation about a substantially vertical axis, and a steering linkage connected to the pontoon mounting means for permitting the person to grasp and move the linkage to turn the pontoon.

4,379,702

INTAKE DUCT FOR AN OUTBOARD ENGINE

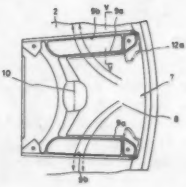
Yukimitsu Takada; Hiroshi Harada, both of Shizuoka, and Shuji Takubo, Hamamatsu, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jan. 5, 1981, Ser. No. 222,559

Claims priority, application Japan, Jan. 10, 1980, 55-1527

Int. Cl.³ B63H *21/26*

U.S. Cl. 440—77 **6 Claims**



1. An intake duct for an outboard engine, said engine having a cowling atop it, said cowling having a recess in its rear top portion above said engine, a right and left first side wall for said recess, an opening at the rear of said recess, and a back wall opposed to said opening; and a cover plate covering and enclosing the top of said recess, and completing, with said cowling, said rear opening, each of said first side walls defining an intake port located along the top edge of said first side walls and below said cover plate, each said intake port extending for a substantial length at an upper elevation adjacent to said cover plate, and opening into said cowling in a direction lateral to said cowling; air flow into said recess flowing through said rear opening and impinging on said back wall, and then dividing to flow sidewardly, over said first side walls, and through said intake ports in a direction lateral to said cowling.

4,379,703

APPARATUS FOR SECURING FINS TO A SURFBOARD

James A. Mizell, Huntington Beach, Calif., assignor to California Fin Systems, Huntington Beach, Calif.

Filed May 4, 1981, Ser. No. 260,488

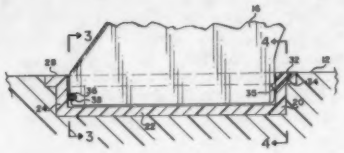
Int. Cl.³ A63C *15/05*

U.S. Cl. 441—79 **3 Claims**

3. A unitary fin box for a surfboard of the type that employs at least one removable fin on the water-side surface thereof, the fin box comprising:

an open elongated box-like member having a floor member, a pair of opposing shorter end members, a pair of opposing longer side members, said floor, end members and side members interconnected to form an elongated slot for receiving the base portion of said removable fin,

said fin box also having a flange member extending substantially parallel to said floor member along the entrance to



said slot, and at least one aperture extending diagonally into said slot extending through one of said end members and through said flange member and toward said floor member for receiving fastening means for securing said base portion within said slot.

4,379,704

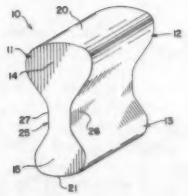
LEG BUOY FOR TRAINING SWIMMERS

Thomas P. Rademacher, Medina, Ohio, assignor to NcNeil Corporation, Akron, Ohio

Filed Apr. 29, 1981, Ser. No. 258,603

Int. Cl.³ B63C *9/08*

U.S. Cl. 441—88 **10 Claims**



1. A buoy for supplementing the buoyancy of a swimmer's legs comprising, a unitary foam member adapted for engagement with and selective retention by the legs of a swimmer, said member having spaced cylindrical elements, said cylindrical elements being of generally prolate circular cross section, the circular cross section of one of said cylindrical elements being substantially smaller than the circular cross section of the other of said cylindrical elements in that engaging the buoy with the cylindrical element of smaller cross-section submerged provides lesser buoyant effect than with the other cylindrical element submerged, shank means spacing and joining said cylindrical elements, said shank means being substantially narrower than the circular cross section of either of said cylindrical elements, and a flexible generally water impervious skin encompassing the entirety of said unitary member.

4,379,705

LIFE BELT

Hikoji Saotome, 1-12-10 Naka-Kokubo, Ichikawa-shi, Chiba-ken, Japan

Filed Aug. 19, 1981, Ser. No. 294,359

Claims priority, application Japan, Aug. 22, 1980, 55-118989[U]

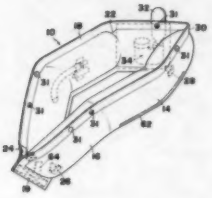
Int. Cl.³ B63C *9/16*

U.S. Cl. 441—94 **4 Claims**

4. An inflatable life belt comprising:

two sheet members each having a first middle portion and second end portions in a symmetrical shape, said second end portions being extended from said first middle portion in an opposite direction and inclined at about 120°–160°

relative to a longitudinal direction of said first middle portion, said two sheet members being sealed together at their circumferences to form as upper flange, lower flange and two end flanges to thereby form a sealed gas chamber, said sheet members sealed together being folded such that said end flanges of the second portions are connected together to thereby form an annular inflatable tubular body,



means for releasably fastening said tubular body around the waist of a person who uses the life belt,

a capsule containing therein compressed gas for inflating said life belt, and

an actuator for releasing the gas into said life belt for inflation.

4,379,706

SLIDABLE-TYPE CONSTANT VELOCITY UNIVERSAL JOINT

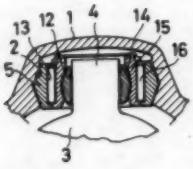
Nobuyuki Otsuka, Kawagoe, and Seiichi Hirai, Sayama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 958,820, Nov. 8, 1978, abandoned. This application Dec. 8, 1980, Ser. No. 214,289

Claims priority, application Japan, Apr. 5, 1978, 53-39254

Int. Cl.³ F16D *3/20*

U.S. Cl. 464—111 **9 Claims**



1. A slidable constant velocity universal joint comprising inner and outer members having free ends which are interengaged, said outer member having three axially extending grooves disposed parallel to one another, said inner member including three radially projecting pods, a roller slidably received on each pod for movement axially thereof and rollably engaged in a respective groove for transmitting rotatable drive between said members, said members having an axially aligned position and being relatively movable to provide relatively inclined positions of said members, and means supporting each roller on its associated pod for axial slidable movement, for universal pivotal movement and for rotation thereon so that when the inner and outer members are inclined with respect to one another the rollers are tilted and axially moved with respect to their respective pods and remain axially aligned in said grooves, said means including a universal pivoting mounting slidably mounted on each said pod and a roller bearing interposed between said roller and said universal pivotal mounting, each said roller and its associated groove having contact surfaces of conforming shape, said pod having an outer cylindrical surface, said roller having an inner cylindrical surface, said roller bearing being engaged with the cylindrical surface of the roller, said universal pivotal mounting comprising inner and outer guide rings, said inner guide ring being engaged with the cylindrical surface of the respective pod, said outer guide ring being engaged with said roller bearing, said guide rings having contact surfaces engaged with one another of spherical shape.

4,379,707

SPLINED JOINTS

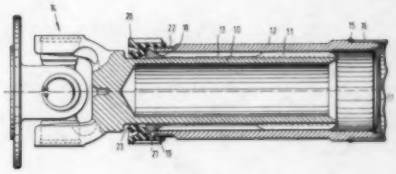
Leslie G. Fisher, Birmingham, England, assignor to BRD Company Limited, Aldridge, England

Filed Aug. 26, 1981, Ser. No. 296,524

Claims priority, application United Kingdom, Aug. 29, 1980, 8028008

Int. Cl.³ F16D *3/06*

U.S. Cl. 464—162 **5 Claims**



1. A slidable splined joint between rotary members, comprising a male member having a plurality of axially extending radially outwardly projecting teeth spaced apart angularly about its rotational axis, a female member having a plurality of inwardly projecting teeth which interfit with the teeth of the male member, and an annular, radially contractible support bearing at the end of the female member engaging the male member to support the latter relative to the female member, wherein there is provided a retaining member by which the support bearing is held in engagement with the female member by way of a tapered surface for contracting the support bearing onto the male member, and screw threaded means by which the retaining member is engaged with the female member, said screw threaded means incorporating a yieldable element so that it cannot be overtightened to cause the support bearing to bind on the male member.

4,379,708

PROCESS FOR TANNING FISH SKINS

Norberto O. S. Rego, 1145 NW. 42st St., Miami, Fla. 33127

Filed Feb. 18, 1982, Ser. No. 349,729
Int. Cl.³ C14C *3/28, 3/04, 3/06*
U.S. Cl. 8—94.12 17 Claims

1. A process for the production of tanned fish skins which comprises:

(a) contacting dry fish skins with an aqueous solution of a neutral salt said solution having a pH adjusted into the range 1.5 to 3.5,

(b) subjecting said fish skins to a two step tanning operation wherein after said first tanning step said skins are washed at a temperature of not more than 35° C. and the second tanning step is carried out using a more concentrated solution than the first tanning step at a temperature of not less than 35° C. and

(c) washing the tanned skins and treating them in an aqueous aqueous bath with an anionic grease and then an oil and then with an alkali metal salt of a weak organic acid followed by an alkali to raise the pH to at least 6.

4,379,709

PROCESS FOR DISINFECTING AND PRESERVING HIDES AND SKINS

Franz Margold, Seeheim-Jugenheim, Fed. Rep. of Germany, assignor to Riedel de Haen Aktiengesellschaft, Seelze, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,388
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022849
Int. Cl.³ C14C *9/00*
U.S. Cl. 8—94.18 6 Claims

1. A process for disinfecting and preserving one or more hides or skins of any kind and provenance by treating it or them with one or more substances having a disinfectant and preservative action, which comprises contacting the one or more hides or skins with up to 2 weight %, calculated on the weight of said one or more hides or skins, of a mixture consisting of an inorganic zinc salt and an acid amide, or said mixture in combination with at least one further nitrogen-containing organic preservative, and subsequently with 5 to 10 weight %, calculated on the weight of said one or more hides or skins, of common salt and 0.5 to 2.5 weight %, calculated on the weight of said one or more hides and skins, of a mono- or dibasic carboxylic acid of from 1 to 6 carbon atoms.

4,379,710

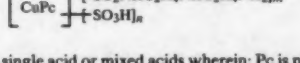
NOVEL COMPOSITIONS AND PROCESSES

Nathan N. Crounse, Myrtle Beach, S.C., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 44,238, May 31, 1979, abandoned. This application Feb. 19, 1981, Ser. No. 235,969
Int. Cl.³ C09B *47/04*
U.S. Cl. 8—527 7 Claims

1. A storage-stable dye composition comprising a concentrated, free-flowing aqueous solution containing by weight of the entire composition:

(a) as the dye constituent approximately 9 to approximately 40 percent of acid addition salts of a phthalocyanine of the formula



with a single acid or mixed acids wherein: Pc is phthalocyanine, m is a number from one to five, and n is a number from zero to one;

(b) from zero to approximately 10 percent of a C_1 to C_2 alkanesulfonic acid selected from the group consisting of methanesulfonic acid and ethanesulfonic acid;

(c) approximately 5 to approximately 30 percent of an acid selected from the group consisting of acetic acid, propionic acid, glycolic acid, 3-hydroxypropionic acid, lactic acid, hydrochloric acid and hydrobromic acid;

(d) approximately 5 to approximately 25 percent of urea or a glycol selected from the group consisting of ethylene glycol, propylene glycol, diethylene glycol and diethylene glycol monoethyl ether; and

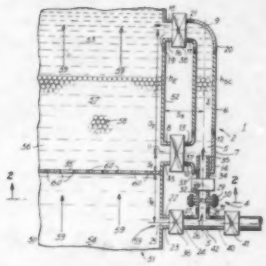
(e) the remainder being water.

4,379,711

APPARATUS AND METHOD FOR VISUALLY MONITORING AN ION EXCHANGE FLUIDIZED BED

Donald P. Satchell, Jr., Clifton, Ariz., assignor to Phelps Dodge Corporation, New York, N.Y.

Division of Ser. No. 110,839, Jan. 10, 1980, Pat. No. 4,298,466. This application Apr. 13, 1981, Ser. No. 253,293
Int. Cl.³ B01D *35/14;* B01J *8/20;* G01N *33/00*
U.S. Cl. 436—82 6 Claims



1. A method for visually monitoring the characteristics of an ion exchanger fluidized bed, wherein the exchanger includes a process solution for supply to the fluidized bed, the fluidized bed including a preferentially absorbing resin and the solution, the method comprising:

a. establishing a visually observable sample fluidized bed displaced from the exchanger fluidized bed in fluid communication with the exchanger fluidized bed such that resin is transferred between the exchanger fluidized bed and the sample fluidized bed;

b. diverting a quantity of solution from the exchanger to form a solution sample;

c. passing the solution sample through an orifice to establish a predetermined flow rate for the solution sample;

d. introducing the solution sample at a controlled flow rate to the sample fluidized bed;

e. returning the solution sample to the exchanger above the exchanger fluidized bed after the solution sample has passed through the sample fluidized bed, whereby the height of the sample fluidized bed is representative of the height of the exchanger fluidized bed.

4,379,712

EVAPORATIVE COOLER

Charles J. Sperr, Jr., and Douglas C. Sperr, both of 8432 E. Wilshire Dr., Scottsdale, Ariz. 85257

Filed Aug. 24, 1981, Ser. No. 295,638
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—257 R 4 Claims

1. In an evaporative cooler including

a housing having an upright surface with an opening therein,

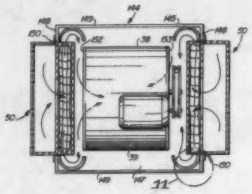
an air pervious, liquid absorbing evaporative pad spanning said opening and having a discharge surface,

means for supplying liquid to said pad, and

blower with said housing means for drawing a stream of air through said pad,

said stream of air exiting said pad in a direction generally normal to said discharge surface and having droplets of said liquid entrained therein,

improvements therein for settling said droplets from said air stream, said improvements comprising:



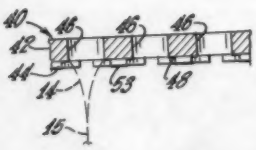
baffle means downstream of said discharge surface for receiving said air stream thereagainst, said baffle means being generally elongate and having a longitudinal edge substantially parallel to the discharge surface of said pad and being generally arcuate in cross-section such that the direction of said air stream is altered to flow in a substantially opposite direction.

4,379,713

METHOD AND APPARATUS FOR FORMING GLASS FIBERS

Arnold J. Eisenberg, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 16, 1981, Ser. No. 331,446
Int. Cl.³ C03D *37/025*
U.S. Cl. 65—1 12 Claims



1. A method of forming glass filaments comprising:

providing a feeder having an orificed wall having a substrate having a plurality of orifices therethrough adapted to issue attenuable streams of molten glass, said substrate and molten material exhibiting a first contact wetting angle; and a control layer joined to said substrate to form a recess around the individual orifices having a network of channels interconnecting said recesses, said channels being adapted to permit said molten glass to move therethrough from one recess to another recess at predetermined times, said channels and recesses having at least a portion of the surface defining said channels and recesses comprised of said substrate, said control layer and said molten glass exhibiting a second contact wetting angle therebetween, the first contact wetting angle being less than the second contact wetting angle such that the molten glass has tendency to prefer to move through said channels from an orifice having a filament attenuation disruption to a non-disrupted orifice;

issuing streams of molten glass from said orificed wall;

and attenuating the streams into filaments.

4,379,714

METHOD FOR REGULATING THE GRANULOMETRIC CHARACTERISTIC OF THE COMPONENTS IN METALLURGICAL SLAGS

Stoycho M. Stoev; Shtelyana D. Dshendova; Kiril N. Stoyanov; Raycho V. Dochev, all of Sofia, and Tzvetan P. Krestev, Vratza, all of Bulgaria, assignors to Vish-Minnogeoloshki Institute, Sofia, Bulgaria

Continuation-in-part of Ser. No. 198,621, Oct. 20, 1980, abandoned. This application Dec. 18, 1981, Ser. No. 332,255
Int. Cl.³ C03B *5/18*
U.S. Cl. 65—19 3 Claims

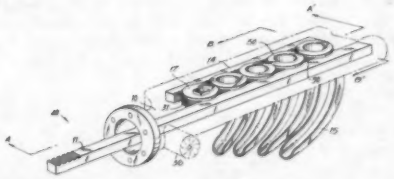
1. A method for regulating the granulometric characteristics of the components in metallurgical slags, comprising the step of subjecting the slag, after the separation of the slag from a metllurgical furnace and during its cooling, to an adjustable vibration action having a frequency of from 12 to 100 Hz and an amplitude from 0.2 to 5 mm or having an average vibrational radius in circular vibration from 0.4 to 12 mm, whereby rapidly to increase the particle size of the metallic inclusions in the slag.

4,379,715

GOB DISTRIBUTOR FOR GLASS OR OTHER MATERIAL

Elio M. Garza, Monterrey, Mexico, assignor to Investigacion Fic Fideicomiso, Monterrey, Mexico

Filed Aug. 28, 1981, Ser. No. 297,309
Claims priority, application Mexico, Oct. 31, 1980, 184566
Int. Cl.³ C03B *5/30*
U.S. Cl. 65—225 10 Claims



1. In a glass gob distributor of the type including plural curved distributing scoops, each supported within a housing for rotational movement about a vertical axis, a pinion carried by each said scoop, and dual racks each meshed with each said pinion at diametrically opposite sides thereof, said drive racks simultaneously angularly indexing said scoops upon longitudinal movement of said racks relatively to each other, the improvement comprising:

a further pinion independent of said scoop pinions, supported by said housing and interposed between and meshed with both said racks, said further pinion translating movement of one said rack into an equal and opposite movement of the other said rack;

means supporting said further pinion for movement towards one of said racks;

adjustable guide means supporting the other of said racks and movable towards the said one rack to move said other rack and said other pinion towards said one rack to eliminate clearance between the teeth of the respective and said further pinion; and,

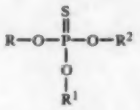
members supporting each said scoop on an upper face of both said racks, said scoops extending downwardly with clearance through apertures in a bottom wall of said housing, said racks providing the sole support and positioning members for said scoops.

4,379,716
COMPOSITIONS AND METHODS FOR REDUCING HERBICIDAL INJURY

David E. Schafer, and Albert J. Czajkowski, both of Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 670,789, Mar. 26, 1976, abandoned. This application Jul. 10, 1978, Ser. No. 923,136
Int. Cl.³ A01N 57/10, 37/00
U.S. Cl. 71—87 15 Claims

1. A method of reducing injury to grass crops by diallate and triallate herbicides which comprises applying to the soil, crop or crop seed an effective safening amount of a compound of the formula



wherein

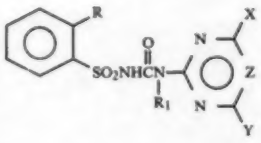
R and R^1 independently represent hydrogen, C_{1-13} alkyl, nitro lower alkyl, halo lower alkyl; R^2 is equal to phenyl, phenyl substituted by one to three C_{1-13} alkyl, lower alkyl, halo, NO_2, CN, CF_3 and CH_3S-moieties or para-amino sulfonylphenyl; provided that phenyl cannot be substituted with NO_2 and CF_3 simultaneously.

4,379,717
METHOD OF CONTROLLING WEEDS IN CONIFERS

George Levitt, and Russell C. Weigel, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 13, 1981, Ser. No. 234,236
Int. Cl.³ A01N 43/54
U.S. Cl. 71—92 6 Claims

1. A method for controlling undesired vegetation in conifers comprising: applying to the locus of said conifers an effective amount of a compund of the formula:



I

wherein

R is CO_2R_2 where R_2 is C_1–C_4 alkyl;

R_1 is H or CH_3;

X is CH_3, or OCH_3;

Y is CH_3 or OCH_3; and

Z is CH; or

an agriculturally acceptable salt thereof.

4,379,718
PROCESS FOR SEPARATING SOLID PARTICULATES FROM A MELT

LeRoy F. Grantham, Calabasas, and James G. Johanson, Malibu Lake, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

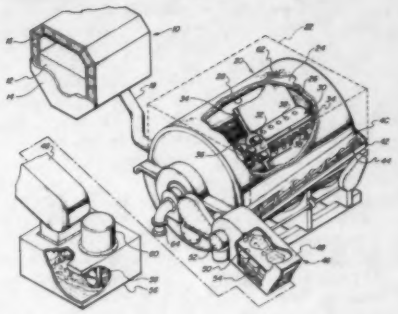
Filed May 18, 1981, Ser. No. 264,496
Int. Cl.³ C22B 21/00
U.S. Cl. 75—24 9 Claims

1. In a metal recovery process wherein there is produced a byproduct having solid ash constituents entrained in a melt comprising a major amount of molten salt, the improvement comprising;

introducing said byproduct into a high-temperature filter apparatus containing a substantially cylindrical rotating filter element having inner and outer walls;

maintaining said byproduct at a temperature above the melting points of said salt;

providing a pressure differential across a portion of said filter element walls to cause a substantial amount of said molten salt to pass through said outer wall of said filter element and form a filter cake comprising solid ash constituents on said outer wall;



continuously removing said filter cake from said outer wall by disposing a blade adjacent to the surface of said outer wall; and

separately recovering from said filter apparatus a molten filtrate passing through said filter element walls for recycle to said metal recovery process, said filtrate comprising the molten salt and having a substantially reduced ash content.

4,379,719
ALUMINUM POWDER ALLOY PRODUCT FOR HIGH TEMPERATURE APPLICATION

Gregory J. Hildeman, Murrysville, and Robert E. Sanders, Jr., New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 20, 1981, Ser. No. 323,181
Int. Cl.³ B22F 3/14; C22C 21/00
U.S. Cl. 419—60 30 Claims

20. A method of producing an improved aluminum article having high strength at elevated temperatures, comprising the steps:

(a) providing atomized aluminum alloy powder consisting essentially of 4 to 12% iron, 1 to 7% of at least one metal from the group consisting of cerium and misch metal, balance aluminum and impurities and incidental elements, the weight ratio of iron to cerium plus misch metal ranging between 1.2 and 4.4:1;

(b) vacuum compacting said powder at a pressure not exceeding 0.1 torr and a temperature of 700° to 850° F. under sufficient compaction to produce a compact at least 98% of full density; and

(c) working said compact at a temperature of 550° to 850° F. equivalent to a cross-sectional reduction of at least 25% to produce said article characterized by a yield strength of at least 35,000 psi and elongation of at least 5½% at a temperature of 450° F.

4,379,720

NICKEL-ALUMINUM-BORON POWDERS PREPARED BY A RAPID SOLIDIFICATION PROCESS

Ranjan Ray, Burlington, and Viswanathan Panchanathan, North Billerica, both of Mass., assignors to Marko Materials, Inc., North Billerica, Mass.

Filed Mar. 15, 1982, Ser. No. 358,235
Int. Cl.³ B22F *1/04*
U.S. Cl. 75—251 **3 Claims**

1. A metallic alloy in powder form with particle size below 4 mesh (U.S. Standard), and having the composition described by the formula:

$$Ni_{40-58}Al_{30-40}B_{12-20}$$

wherein Ni, Al, and B are nickel, aluminum, and boron respectively and wherein the subscripts are in atom percent and the total content of Ni, Al, and B is 100; wherein said alloy being prepared by the method comprising the steps:

(a) forming a melt of said alloy

(b) depositing said melt against a rapidly moving quench surface adapted to quench said melt at a rate in the range of approximately 10^5 to 10^7 °C./second and form thereby a rapidly solidified brittle strip of said alloys characterized by hardness values between 800 and 1100 Kg/mm²

(c) comminuting said strip into powders.

4,379,721

PRESSURE SENSITIVE RECORDING MATERIALS

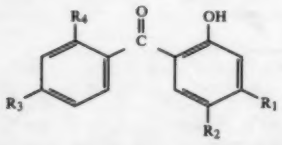
Marion Qualitz, Hilden, and Viktor A. Krupp, Düsseldorf, both of Fed. Rep. of Germany, assignors to Spezial-Papiermaschinenfabrik August Alfred Krupp GmbH & Co., Hilden, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 241,523
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009754; Mar. 14, 1980, 3009806
Int. Cl.³ C09D *11/00*
U.S. Cl. 106—21 **51 Claims**

1. Pressure-sensitive recording material having improved storability, lightfastness and heat resistance, which comprises a unit containing a dye precursor and a unit containing a dye acceptor material, which is capable of color formation by reaction with the dye precursor, characterized in that the dye acceptor material is an intimate mixture comprising

(a) either

(aa) a 2-hydroxy-benzophenone of formula I

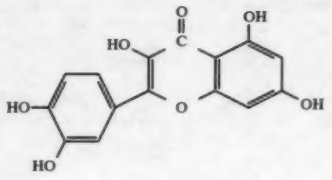


(I)

where R_1 is a hydroxy-group, an unsubstituted alkoxy residue with from 1 to 18 carbon atoms or an alkoxy residue with from 1 to 4 carbon atoms, carrying 1 or 2 hydroxy-groups, an alkoxy residue with from 1 to 4 carbon atoms, carrying 1 or 2 hydroxy groups and esterified with a saturated or olefinically unsaturated carboxylic acid with from 2 to 4 carbon atoms, R_2 is hydrogen, a phenyl residue, the sulphonic acid group —SO_3H or the group —SO_3Me, Me being an alkali metal, R_3 is hydrogen, the hydroxy group, an alkyl group with from 1 to 12 carbon atoms, an alkoxy goup with from 1 to 18 carbon atoms or a phenyl residue, and R_4 is hydrogen, the hydroxy group, a phenyl residue, the carboxy-group —COOH or the group —COOMe, Me being an alkali metal;

or

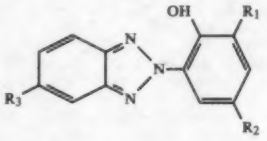
(bb) 3,5,7,3',4'-pentahydroxy-flavone of formula II



(II)

and

(b) a substituted benzotriazole of formula III



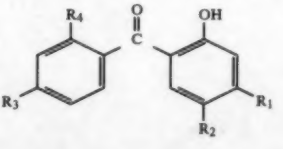
(III)

where R_1 is hydrogen or the tertiary butyl group, R_2 an alkyl residue with from 1 to 12 carbon atoms, an alkoxy residue with from 1 to 12 carbon atoms, the cyclohexyl residue, the sulphonic acid group —SO_3H or the group —SO_3Me, Me being an alkali metal, and R_3 is hydrogen or chlorine.

18. For a pressure-sensitive recording material comprising a unit containing a dye precursor or its solution and a unit containing a dye acceptor material, which is capable of color formation by reaction with the dye precursor, a sheet-like, dye acceptor material containing unit consisting of a carrier material which is in sheet or web form, coated on one side with the dye acceptor material, characterized in that the dye acceptor material is an intimate mixture comprising

(a) either

(aa) a 2-hydroxy-benzophenone of formula I

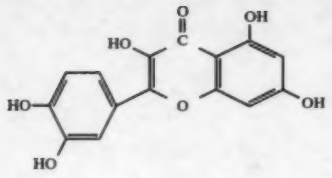


(I)

where R_1 is a hydroxy-group, an unsubstituted alkoxy residue with from 1 to 18 carbon atoms or an alkoxy residue with from 1 to 4 carbon atoms, carrying 1 or 2 hydroxy-groups, an alkoxy residue with from 1 to 4 carbon atoms, carrying 1 or 2 hydroxy groups and esterified with a saturated or olefinically unsaturated carboxylic acid with from 2 to 4 carbon atoms, R_2 is hydrogen, a phenyl residue, the sulphonic acid group —SO_3H or the group —SO_3Me, Me being an alkali metal, R_3 is hydrogen, the hydroxy group, an alkyl group with from 1 to 12 carbon atoms, an alkoxy group with from 1 to 18 carbon atoms or a phenyl residue, and R_4 is hydrogen, the hydroxy group, a phenyl residue, the carboxy-group —COOH or the group —COOMe, Me being an alkali metal;

or

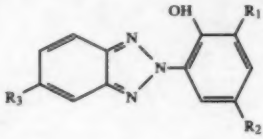
(bb) 3,5,7,3',4'-pentahydroxy-flavone of formula II



(II)

and

(b) a substituted benzotriazole of formula III



(III)

where R_1 is hydrogen or the tertiary butyl group, R_2 an alkyl residue with from 1 to 12 carbon atoms, an alkoxy residue with from 1 to 12 carbon atoms, the cyclohexyl residue, the sulphonic acid group $—SO_3H$ or the group $—SO_3Me$, Me being an alkali metal, and R_3 is hydrogen or chlorine.

4,379,722

PIPELINE GEL PLUG

Paul R. Scott, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 932,395, Aug. 9, 1978, abandoned, which is a continuation of Ser. No. 836,876, Sep. 26, 1977, abandoned. This application Jan. 29, 1980, Ser. No. 116,506

Int. Cl.³ B01J *13/00*; **C09K** *3/00*

U.S. Cl. 106—287.17 **2 Claims**

1. A non-thixotropic Bingham plastic composition for a gel plug movable at a predetermined pressure in a pipeline and capable of withstanding hydrostatic forces below said predetermined pressure, comprising about 20–90%w of a vacuum-flashed residue from thermally cracked oils containing aromatics and asphaltenes, about 10–30%w of a tetraalkyl ammonium smectite, and about 0–60%w of a particulate filler.

4,379,723

METHOD OF REMOVING ELECTROCATALYTICALLY ACTIVE PROTECTIVE COATINGS FROM ELECTRODES WITH METAL CORES, AND THE USE OF THE METHOD

Christine Zöllner geb. Möller, Schwaig/b. Nuremberg, Fed. Rep. of Germany, assignor to C. Conradty Nurnberg GmbH & Co. KG, Fed. Rep. of Germany

Filed Aug. 10, 1981, Ser. No. 291,407

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032480

Int. Cl.³ H01H *9/30*; **C23G** *1/00*

U.S. Cl. 134—2 **14 Claims**

1. A method of removing an electroconductive coating from a metal core electrode substrate comprising forming a non-adhesive intermediate layer of a compound of the metal substrate between the electroconductive coating and the substrate by thermally treating said electrode in a gas atmosphere containing at least a proportion of an oxygen carbon; nitrogen—or hydrogen yielding component or a mixture thereof and thereafter removing the electroconductive coating.

4,379,724

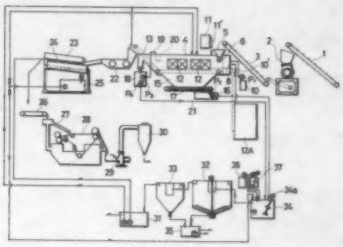
METHOD FOR RECLAIMING WASTE THERMOPLASTIC RESIN FILM

Hidehiro Kashiwagi, Tokushima, Japan, assignor to Taiyo Denko Kabushiki Kaisha, Tokushima, Japan

Filed Aug. 14, 1981, Ser. No. 293,420

Int. Cl.³ B08B *3/12*

U.S. Cl. 134—1 **7 Claims**



1. A method of cleaning soiled, thermoplastic resin, waste film, which comprises the steps of cutting a mass of said soiled, thermoplastic resin, waste film to provide a mass of pieces of said waste film, which pieces are deformed and contain soil distributed thereon and adhering thereto; feeding said mass of pieces onto one end of the upper surface of an elongated, mesh conveyor which conveyor is disposed within a washing tank filled with heated aqueous cleaning liquid and is moving substantially horizontally therein whereby said pieces are immersed in said liquid, simultaneously supplying a first quantity of said liquid from outside said tank into said tank adjacent to said one end of said conveyor and forcibly directing said heated aqueous cleaning liquid in said tank in a direction lengthwise of said conveyor from said one end thereof toward the opposite end thereof whereby said liquid assists said conveyor in moving said pieces toward the opposite end of said conveyor, simultaneously directing into said tank jets of a second quantity of said liquid supplied from outside said tank, said jets being located above the upper surface of said conveyor close to but upstream of the opposite end of said conveyor, said jets being directed above the upper surface of said conveyor in a direction lengthwise of and opposite to the direction of movement of said conveyor, and simultaneously applying ultrasonic energy to said liquid from positions located longitudinally of said conveyor between said jets and said one end of said conveyor, said positions being opposed to each other and being located on opposite lateral sides of and above the upper surface of said conveyor so that said ultrasonic energy is directed laterally inwardly and across the upper surface of said conveyor substantially at right angles to the direction of movement thereof, said liquid being at a temperature sufficient to soften said pieces and to remove soil therefrom while said pieces are being subjected to said ultrasonic energy so as to be beaten thereby, to smooth the deformations thereof and to assist in removing soil therefrom; discharging said pieces from said tank at the opposite end of said conveyor and then washing said pieces with pressurized water.

4,379,725

PROCESS FOR HOT ISOSTATIC PRESSING OF A METAL WORKPIECE

Willard E. Kemp, 1035 Dairy Ashford, Suite 146, Houston, Tex. 77079

Filed Feb. 8, 1982, Ser. No. 346,503

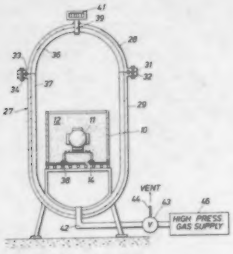
Int. Cl.³ C21D *1/53*, *1/78*

U.S. Cl. 148—4 **13 Claims**

1. A process for treating a metal workpiece comprising the steps of:

(a) subjecting the workpiece to a fluidized particulate bed at

a temperature of a first level until the workpiece throughout reaches substantially this temperature at the first level;
(b) terminating fluidization of the bed;
(c) subjecting the workpiece to superatmospheric gas pressure while leaving the workpiece in the bed at a relatively



constant temperature of about the first level until pressure and temperature dependent internal structural changes have occurred in the workpiece; and
(d) removing the workpiece from the bed and superatmospheric pressure for subsequent utilization.

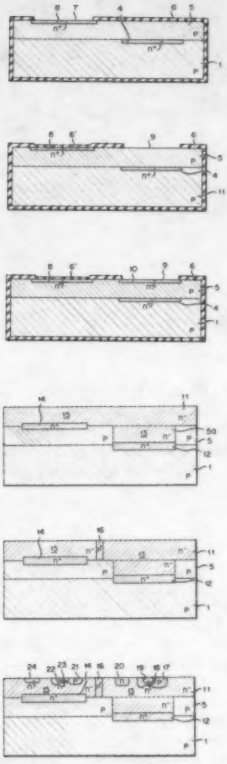
4,379,726

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE UTILIZING OUTDIFFUSION AND EPITAXIAL DEPOSITION

Kuniaki Kumamaru, Chigasaki; Shunichi Hiraki, Yokohama, and Toshio Yonezawa, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 6, 1980, Ser. No. 147,334
Claims priority, application Japan, May 17, 1979, 54-60673
Int. Cl.³ H01L *21/74, 21/76*
U.S. Cl. 148—175 **1 Claim**

1. A method of manufacturing a semiconductor device comprising the steps of: selectively forming at least one high first impurity concentration region of a conductivity type opposite to the conductivity type of a semiconductor substrate and having a desired depth in said substrate along the principal surface thereof, depositing a first epitaxial layer of the same conductivity type as said substrate on the entire principal surface of said semiconductor substrate, selectively forming at least one second high impurity concentration region of the opposite conductivity type to said substrate in said first epitaxial layer along a surface portion thereof not corresponding to said first high impurity concentration region, selectively forming a low impurity concentration region of the opposite conductivity type to said substrate in said first epitaxial layer along a surface portion thereof corresponding to said first high impurity concentration region, the diffusion rate of the low impurity region being higher than that of the first and second high impurity concentration regions, depositing a second epitaxial layer on the entire surface of said first epitaxial layer, thermally treating the resultant intermediate device to cause diffusion of the impurities in the first and second high impurity concentration regions into the respective first and second epitaxial layers and also causing diffusion of the impurity in the low impurity concentration region into the entire portion of the first epitaxial layer corresponding to the first high impurity concentration region, forming an element isolation region of the same conductivity type as said first epitaxial layer in a portion of said second epitaxial layer between said first and second high impurity concentration regions such that said isolation layer reaches the surface of said first epitaxial layer, and forming at least one high breakdown voltage semiconductor element in said second epitaxial layer in a portion thereof corresponding to said first high impurity concentration region and at least one low breakdown voltage semiconductor element in said second epitaxial



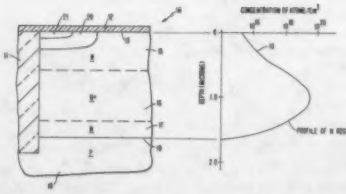
layer in a portion thereof corresponding to said second high impurity concentration region.

4,379,727

METHOD OF LASER ANNEALING OF SUBSURFACE ION IMPLANTED REGIONS

Howard H. Hansen, Underhill; Jerome B. Lasky, and Ronald R. Silverman, both of Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 8, 1981, Ser. No. 281,267
Int. Cl.³ H01L *21/263, 21/265*
U.S. Cl. 148—1.5 **9 Claims**



1. A method of annealing buried ion implanted regions in a semiconductor body comprising;
ion implanting impurity ions into a crystalline semiconduc-

tor body to provide in the body a buried region having a high concentration of said impurity ions at a predetermined depth below the surface, and

annealing said buried region by exposure of the body to the emission of a continuous wave laser having an emission frequency which is substantially absorbed by the buried region and to which the remainder of the body is substantially transparent to cause electrical activation of the implanted ions in said buried region without substantial thermal diffusion of the implanted species.

4,379,728

CYANOUREA COMPOUNDS OR POLYMERS THEREOF AS EPOXY RESIN CURING AGENTS

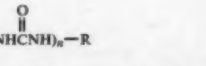
Shiow C. Lin, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Feb. 4, 1982, Ser. No. 345,948

Int. Cl.³ C08G *59/44*

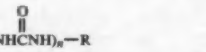
U.S. Cl. 156—307.3 **18 Claims**

1. A heat curable composition comprising an epoxy resin and a cyanourea compound of the formula:



wherein R is the organic moiety of a mono- or polyisocyanate remaining after reaction of the isocyanate groups to form cyanourea groups and n is 1 or more, the equivalent ratio of epoxide:N-cyanourea being 1 to 30:2.

15. The process of adhering two substrates which comprises applying to at least one of said substrates a heat curable composition comprising an epoxy resin and a cyanourea compound of the formula:



wherein R is the organic moiety of a mono- or polyisocyanate remaining after reaction of the isocyanate groups to form cyanourea groups and n is 1 or more, the equivalent ratio of epoxide:N-cyanourea being 1 to 30:2 contacting the substrates with the composition therebetween and heating the thus contacted substrates at a temperature above 100° C.

4,379,729

METHOD AND APPARATUS FOR THE PRODUCTION OF COMPOSITE SHEET MATERIAL AND A SHEET MATERIAL PRODUCED THEREBY

Sydney H. Cross, Newport, England, assignor to Tarmac Industrial Holdings Limited, Wolverhampton, England

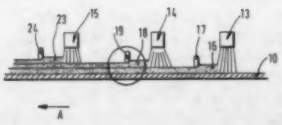
PCT No. PCT/GB80/00125, § 371 Date Apr. 3, 1981, § 102(e) Date Apr. 3, 1981, PCT Pub. No. WO81/00375, PCT Pub. Date Feb. 19, 1981

PCT Filed Aug. 7, 1980, Ser. No. 253,845

Claims priority, application United Kingdom, Aug. 9, 1979, 7927723; Aug. 9, 1979, 7927725

Int. Cl.³ B28B *1/08*; B32B *31/16*

U.S. Cl. 156—73.6 **15 Claims**



1. A method of making a composite product including distinct layers of two different water-based curable compositions capable of bonding together on curing, the method comprising the steps of:

depositing a first layer of a first of said curable compositions onto a base member while said first composition is wet and uncured and in a viscous state having adequate strength to support a second layer but capable of flowing under the influence of vibration;

depositing directly and immediately onto said wet first layer a wet second layer of the second of said curable compositions without any prior treatment of the wet first layer other than levelling, the second composition being wet and uncured and in a viscous state but capable of flowing under the influence of vibration and the two layers meeting at an interface;

temporarily creating a localised zone of fluidization extending through said wet second layer to the interface between the wet first and second layers by the application of vibration to a small localised area of the surface of the wet second layer to promote intimacy and subsequent bonding of the first and second layers, the first and second compositions remaining viscous outside the said localised zone of fluidisation;

and allowing the first and second compositions to cure together to form the composite product.

4,379,730

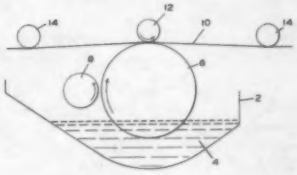
METHOD OF COATING AN OPEN WEAVE FABRIC

Larry C. Anderson, Wrightsville; Robert C. Lausch, Ephrata, and Peter J. Sydorko, Lancaster, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Nov. 23, 1981, Ser. No. 323,942

Int. Cl.³ B05D *1/28*

U.S. Cl. 156—324 **3 Claims**



1. A method of coating an open weave fabric wherein the coating apparatus has an applicator roll for applying the coating to the fabric, a metering roll for controlling the thickness of material on the applicator roll and a pressure roll for holding the fabric against the surface of the applicator roll and wherein the fabric being coated is woven with an open weave having approximately 10 by 10 strands per inch, the method comprising the steps of:

a. applying a coating to the applicator roll,

b. passing the applicator roll by the metering roll which controls the thickness of the coating on the applicator roll, moving the metering roll with a tangential speed which is 10% to 15% of the tangential speed of the applicator roll so as to provide a wiping action of the metering roll relative to the applicator roll, both said applicator roll and metering roll moving in the same direction at the nip between the two rolls,

c. moving the applicator roll into contact with the open weave fabric to be coated with the applicator roll and fabric moving at the same tangential speed,

d. pressing the fabric against the applicator roll with a pressure roll at a pressure of about 1–15 pounds per lineal inch to work the coating into the structure of the strands forming the open weave fabric but not sufficient to force the coating into and through the open area of the weave of the fabric whereby the fabric is provided with a coating over 90% of the strands of the fabric with very little coating being applied to the open area of the weave of the fabric

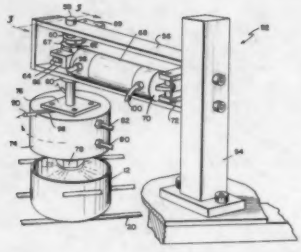
and no buildup of globs of coating material on the surface of the fabric.

4,379,731

METHOD AND APPARATUS FOR APPLYING HOT MELT ADHESIVE TO BASE CUPS

Geoffrey A. D. Long, Dunwoody, and Brian C. McPike, Douglass, both of Ga., assignors to Sewell Plastics, Inc., Atlanta, Ga.

Filed Aug. 14, 1981, Ser. No. 292,835
Int. Cl.³ B05B *1/20*
U.S. Cl. 156—356 10 Claims



1. In an apparatus for assembling containers into cup-shaped bases, an applicator means for coating a contact surface of each base with a bonding agent preparatorily to placement of a corresponding container therein, the applicator means comprising:

(a) a support fixed to said apparatus adjacent the supply of cup-shaped bases,

(b) pivot means rotationally supported by the support in alignment with the open end of one of the cup-shaped bases,

(c) nozzle means fixed to said pivot means and rotatable therewith for ejecting a bonding agent into the cup-shaped bases,

(d) rotating means connected to the support and to the pivot means for rotating the nozzle with respect to the cup-shaped bases, and

(e) control means connected to the nozzle means and to the rotating means for causing the nozzle means to rotate and eject a bonding agent simultaneously, the control means comprising a cam fixed to rotate with the pivot means and a switch means operated by the said cam.

4,379,732

BONDING APPLICATOR FOR PRODUCING FLEXIBLE TUBING

Wayne K. Fairchild, 3623 W. Warner, Santa Ana, Calif. 92704

Filed Aug. 24, 1981, Ser. No. 295,666
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—428 3 Claims

1. A bonding-applicator device for producing flexible tubing from a continuous, substantially flat, plastic ribbon, the device comprising:

a first valve means;

a second valve means connected to said first valve means, wherein one of said valve means is an ON/OFF valve and said other valve means is a flow-control valve;

a reservoir having a solvent fluid stored therein;

means connecting said reservoir to one of said valves, wherein said connecting means comprises a hose interconnecting said reservoir with said ON/OFF valve means;

an applicator arm having one free end and an opposite end connected to said ON/OFF valve means to cause said ON/OFF valve means to operate between an "on" and an "off" position; and

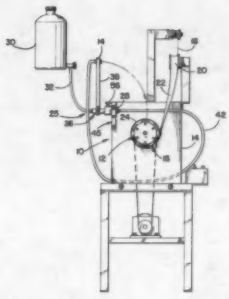
means disposed in said free end of said applicator arm adapted to engage and apply solvent to the ribbon as the flexible tubing is being formed, said means to apply said solvent comprising:

(a) a bore formed in said free end of said applicator arm,

(b) a nipple secured in said bore,

(c) a hose connecting said nipple to said flow-control valve, and

(d) an applicator pad communicating with said bore to receive said solvent therethrough in an amount regulated by said flow-control valve;



said ON/OFF valve means including an extended valve stem secured in said applicator arm, whereby said ON/-OFF valve is placed in an "on" mode when said applicator arm is moved downwardly to allow said applicator pad to engage said ribbon, and is placed in an "off" mode when said applicator arm is arranged in a substantially vertical position;

said flow-control-valve means including means to regulate the flow of solvent being dispensed proportionately to the speed of the moving ribbon.

4,379,733

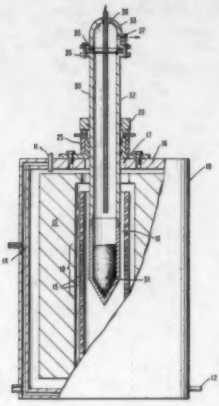
BICAMERAL MODE CRYSTAL GROWTH APPARATUS AND PROCESS

Antonio C. Pastor, Santa Monica; Ricardo C. Pastor, Manhattan Beach, and Kaneto Arita, Gardena, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Oct. 2, 1981, Ser. No. 307,986
Int. Cl.³ C30B *11/00*
U.S. Cl. 156—616 R 9 Claims

7. An improvement in the process of forming alkaline earth halide, rare earth halide and alkali metal halide crystals from the melt of selected reactants under a dynamic reactive atmosphere where said improvement comprises the steps of forming said melt, soaking said melt and cooling said melt by a Bridgman-type movement under said reactive atmosphere in a capsule assembly that is positioned within a furnace chamber and isolated from ambient gases by (1) an inert atmosphere created within said chamber, said inert atmosphere being prevented from communicating with said reactive atmosphere and (2) a

radial seal which includes a gas trap means for entrapping and removing any oxygen-containing gaseous species that may be



absorbed on said capsule assembly, together with sealing means on each side of said gas trap means.

4,379,734

MULTISTAGE EVAPORATOR

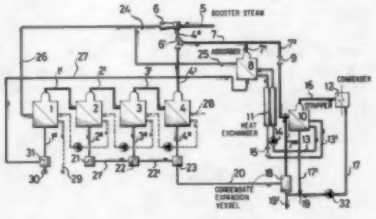
Paul Franzen, Koblenz, Fed. Rep. of Germany, assignor to FA. Maschinenfabrik Buckau R. Wolf AG, Grevenbroich, Fed. Rep. of Germany

Filed Apr. 8, 1981, Ser. No. 252,122

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1980, 3016406

Int. Cl.³ B01D 1/26

U.S. Cl. 159—17 R 30 Claims



1. A multistage evaporator comprising

an evaporator section including a plurality of evaporating stages;

a vapor compressor connected to the evaporator section; and

a heat pump connected to the evaporator section.

4,379,735

THREE-LAYER FORMING FABRIC

Donald G. MacBean, Ottawa, Canada, assignor to JWI Ltd., Kanata, Canada

Filed Aug. 6, 1981, Ser. No. 290,797

Int. Cl.³ D21F 1/10

U.S. Cl. 162—348 6 Claims

1. A single-ply forming fabric comprising an endless belt having opposed side edges, said forming fabric having a lateral direction extending between the side edges thereof and a longitudinal direction extending perpendicular to said lateral direction, said forming fabric being a backing fabric for use in combination with a conveying fabric with which it converges on a twin-wire paper making machine wherein a flat jet-stream of pulp is injected between said conveying backing and conveying fabrics for applying opposed pressure to said pulp for removing water therefrom to form a sheet of paper, said single-ply forming fabric having a plurality of monofilament polymeric warp strands extending in the longitudinal direction and interwoven, with approximately 100% warp fill, with monofilament polymeric weft strands extending in the lateral direction, said weft strands disposed in vertically aligned groups of at least three to obtain greater stiffness in the lateral direction whereby to substantially re-distribute pulp laterally when it is sandwiched between said fabrics.

4,379,736

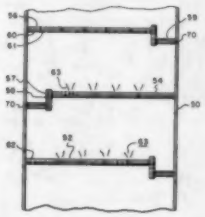
METHOD AND APPARATUS FOR INHIBITING THE FORMATION OF POLYMERIZED VINYLAROMATIC COMPOUNDS DURING DISTILLATIVE PURIFICATION OF VINYLAROMATIC MONOMER

Debra L. Kendall; James M. Watson, and Danny P. Wright, all of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Dec. 23, 1981, Ser. No. 333,604

Int. Cl.³ B01D 3/32

U.S. Cl. 203—9 15 Claims



1. A method of inhibiting the formation of polymerized vinylaromatic compounds during distillative purification of vinylaromatic monomer from a crude feed comprising vinylaromatic monomer admixed with lower and higher boiling materials, said method comprising distilling said vinylaromatic monomer from said crude feed in a multitray distillation column equipped with vapor liquid contact trays provided with openings for upward passage of vapors therethrough and downcomers for downward passage of liquid from tray to tray wherein the downcomers and tray bottoms are coated with a fluorocarbon polymer.

4,379,737

METHOD TO MAKE A BUILT UP AREA ROTARY PRINTING SCREEN

Stephen G. Mearig, Mountville, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Nov. 18, 1981, Ser. No. 322,456

Int. Cl.³ C25D 1/08

U.S. Cl. 204—11 1 Claim

1. A method of forming a rotary printing screen wherein the screen is initially formed by coating a resist material on a conventional plating mandrel, placing a film over the resist

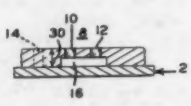
material and exposing the resist material through the film to form a mesh pattern in the resist material, then developing the exposed resist material to result in a mesh pattern of hardened resist material on the plating mandrel, then plating the mandrel in a conventional manner so that plating material is not deposited on the mandrel where a resist material exists, or overplated over the resist, but is deposited in the areas where no resist material exists, to form a plated surface with perforations therein, the improvement comprising:

(a) coating the outside surface of the newly plated surface with a second resist coating;

(b) placing a film over the second resist coating;

(c) exposing the film to collimated light to sensitize the second resist material in selected regions beneath the photographic film;

(d) developing the exposed resist to provide on the first plated surface a pattern of second resist material existing in some areas and no second resist material existing in other areas, the second resist material existing on the



plated surface only in those areas of the first plating that has perforations therethrough, said second resist covering plural perforations and said second resist material filling said perforations and covering the areas surrounding the perforations;

(e) plating the original plated surface with the second resist pattern thereon to form a second plated surface which becomes integral with the first plated surface in those areas where no resist material exists, but with no second plated surface being provided in those areas where the second resist coating exists, the outside surface of the second plated surface forming the exterior surface of the printing screen;

(f) washing and cleaning the plated surface and removing the plated surface from the plating mandrel to form a cylindrical rotary printing screen with different areas of perforations in a pattern defining a mesh pattern formed by the first resist with the areas of perforations (which is) spaced from the exterior surface of the screen by a single large open area formed by the second resist.

4,379,738

ELECTROPLATING ZINC

Paul A. Kohl, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 108,964, Dec. 31, 1979, Pat. No. 4,310,392. This application Oct. 19, 1981, Ser. No. 312,708

Int. Cl.³ C25D *3/22*

U.S. Cl. 204—55 R **6 Claims**

1. A process for electroplating metallic substances consisting essentially of zinc comprising the step of passing current through an anode, aqueous plating solution and cathode characterized in that the plating bath comprises an heterocyclic additive consisting essentially of phenolphthalein.

4,379,739

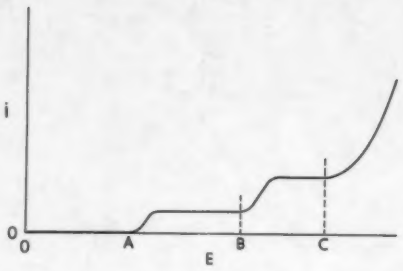
ELECTROLYTIC REDUCTION OF CEPHALOSPORIN P-NITROBENZYL ESTERS

David A. Hall, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

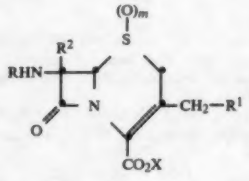
Continuation-in-part of Ser. No. 135,829, Mar. 31, 1980, abandoned. This application Apr. 30, 1981, Ser. No. 259,316

Int. Cl.³ C25B *3/00*

U.S. Cl. 204—72 **25 Claims**



1. A process for preparing a compound of the formula



wherein

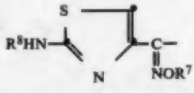
X is hydrogen;

m is 0 or 1;

R^2 is hydrogen or methoxy;

R is hydrogen or —COR^3;

R^3 is hydrogen, C_1—C_3 alkyl, halomethyl, benzyloxy, 2,2,2-trichloroethoxy, t-butoxy, R^4, R^4—$(O)_n$—CH_2—, R^4—$CH(R^5)$—, R^6—CH_2—, or



wherein R^7 is hydrogen or C_1–C_3 alkyl and R^8 is hydrogen or an amino-protecting group;

R^4 is cyclohexadienyl or phenyl, or cyclohexadienyl or phenyl substituted with one or two halo, hydroxy, protected hydroxy, aminomethyl, protected aminomethyl, C_1–C_4 alkyl or C_1–C_4 alkoxy groups;

n is 0 or 1;

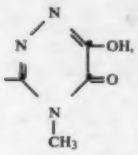
R^5 is hydroxy, protected hydroxy, amino, protected amino, carboxy or protected carboxy;

R^6 is 2-thienyl, 2-furyl, 5-tetrazolyl or 1-tetrazolyl;

R^1 is C_1–C_4 alkanoyloxy, benzoyloxy, fluoro, chloro, carbamoyloxy, C_1–C_4 alkylcarbamoyloxy, pyridinio, pyridinio substituted with C_1–C_4 alkyl, C_1–C_4 alkanoyl, carbamoyl, C_1–C_4 alkylcarbamoyl, chloro, fluoro, hydroxy or trifluoromethyl, or the corresponding pyridinio chlorides or bromides, or —S—R^9;

R^9 is —CH_2CO_2(C_1–C_4 alkyl), carbamoyl, phenyl, phenyl substituted with one or two chloro, fluoro, C_1–C_4 alkyl, hydroxy, C_1–C_4 alkylsulfonamido or trifluoromethyl

groups; triazol-3-yl unsubstituted or substituted with one or two groups independently selected from C_1–C_3 alkyl, —CO_2(C_1–C_4 alkyl), —$CONH_2$ and —CH_2NHOCO(benzyl or C_1–C_4 alkyl);



tetrazol-1-yl or tetrazol-5-yl substituted with one or two groups independently selected from C_1–C_4 alkyl and —CH_2CO_2(C_1–C_4 alkyl or hydrogen); 4-cyano-5-aminopyrimidin-2-yl, or 5-methyl-1,3,4-thiadiazol-2-yl;

provided that n is 0 when R^4 is cyclohexadienyl;

which process comprises electrolytically reducing a compound of the above formula wherein X is p-nitrobenzyl in an acidic liquid medium comprising from about 0 to about 50% water, an acid having a pK_a determined in water of 0 or below, the amount of said acid being at least four moles per mole of the compound to be reduced, and an organic solvent substantially inert to electrolytic reduction, at the working electrode of an electrolytic cell, said working electrode substantially comprising carbon, mercury, tin, aluminum, silver, copper, lead, chromium, zinc, nickel or cadmium, at a temperature from about 0° C. to about 75° C., at a potential in a range from about the potential of the initial onset of current flow of the first reduction to about the potential of the initial onset of current flow of the second reduction.

4,379,740

PHOTOASSISTED GENERATION OF HYDROGEN FROM WATER

Adel I. Nazzal, San Jose, and Ulrich T. Mueller-Westerhoff, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,085
Int. Cl.³ C25B *1/02, 11/04*
U.S. Cl. 204—129 **10 Claims**

1. A process for generating hydrogen from water containing an acid by passing an electric current through the water using a cathode which is a semiconductor exposed to light, said process characterized in that a transition metal metallocenophane compound is attached to the surface of the cathode by means of a polymer.

4,379,741

OXYGEN CONCENTRATION SENSOR

Hiromi Sano, Nagoya, and Masatoshi Suzuki, Anjo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 9, 1981, Ser. No. 281,855
Claims priority, application Japan, Jul. 11, 1980, 55-95250
Int. Cl.³ G01N *27/58*
U.S. Cl. 204—424 **5 Claims**

1. An oxygen concentration sensor comprising:

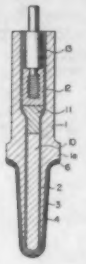
a generally cup-shaped sensing element of a solid electrolyte member having an open end and a closed end;

first and second electrodes provided on the inner and outer surfaces of said sensing element;

a solid rod made of solid reference material having a reference oxygen partial pressure characteristic and disposed on the closed end of said sensing element;

an electrically conductive sealing material element located at the upper portion of said sensing element adjacent to the open end of said sensing element, said sealing material element being a melted and solidified mixture of metal powder and glass powder; and

a metal terminal supported by and partially embedded into said sealing material element to electrically connect said



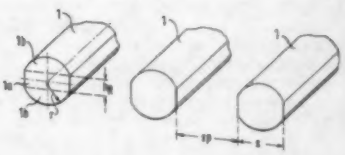
first electrode with said terminal through said sealing material element.

4,379,742

GAS-GENERATING METAL ELECTRODE FOR ELECTROCHEMICAL PROCESSES

Hans-Carl Rathjen, and Konrad Koziol, both of Röthenbach, Fed. Rep. of Germany, assignors to Conradty GmbH Co. Metallelektroden KG, Rothenbach, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 237,279
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1980, 3008116
Int. Cl.³ C25B *11/02, 11/04, 9/00*
U.S. Cl. 204—286 **10 Claims**



1. A gas-generating metal electrode for electrochemical processes, more particularly a coated titanium anode for amalgam cells, comprising spaced-apart parallel rods arranged in a horizontal plane, the surfaces of said rods having a cross section whose height normal to said plane is greater than the width parallel thereto, characterized in that the cross section of each of said rods is comprised of a rectangle whose height is normal to said plane and at least one chordal segment whose chord corresponds to and coincides with the width of said rectangle on one side thereof, said chord extending between and interconnecting two other and opposite sides of said rectangle.

4,379,743

SPUTTERING APPARATUS COMPRISING CONTROL MEANS FOR PREVENTING IMPURITY GASES FROM ENTERING A SPUTTERING CHAMBER

Masashi Nakatsukasa, and Nobuyuki Takahashi, both of Fuchu, Japan, assignors to Anelva Corporation, Tokyo, Japan

Filed Jul. 29, 1981, Ser. No. 287,925
Claims priority, application Japan, Jul. 30, 1980, 55/104531
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **4 Claims**

1. A sputtering apparatus comprising a main chamber defining a main hollow space, first means for holding a substrate in said main hollow space, second means for sputtering a predetermined material onto the substrate held by said first means to form a layer of said material, a preliminary chamber defining a

preliminary hollow space, third means for carrying out preliminary processing of a substrate in said preliminary hollow space, valve means for selectively isolating said main and said preliminary hollow spaces from each other and making said main and said preliminary hollow spaces communicate with each other for transfer of the substrate from said third means to said first means, first pressure controlling means coupled to said main hollow space for controlling a first pressure in said main hollow space, second pressure controlling means coupled to said preliminary hollow space for controlling a second pressure in said preliminary hollow space, wherein the improvement comprises:

control means coupled to said valve means and at least to a selected one of said first and said second pressure controlling means for controlling said selected pressure controlling means with reference to completion of said preliminary processing and for opening said valve means after said second pressure becomes less than said first pressure.

4,379,744

COAL LIQUEFACTION PROCESS

Joel W. Rosenthal, El Cerrito, and Arthur J. Dahlberg, Rodeo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 194,730, Oct. 6, 1980, Pat. No. 4,330,393, which is a continuation-in-part of Ser. No. 12,185, Feb. 14, 1979, Pat. No. 4,330,390, which is a continuation-in-part of Ser. No. 754,198, Dec. 27, 1976, Pat. No. 4,330,389. This application Sep. 8, 1981, Ser. No. 299,917

Int. Cl.³ C10G *1/06, 1/08, 1/00*

U.S. Cl. 208—10 **42 Claims**

1. A process for liquefying coal which comprises:

(a) heating a slurry comprising a solvent, particulate coal, and an externally supplied dispersed dissolution catalyst in the presence of hydrogen in a first reaction zone to substantially dissolve the coal and provide a first effluent slurry having a normally liquid portion comprising solvent and dissolved coal and containing undissolved solids and dissolution catalyst; and

(b) contacting at least a portion of said normally liquid portion containing undissolved solids and dissolution catalyst with hydrogen in a second reaction zone in the presence of a second externally supplied hydrogenation catalyst under hydrogenation conditions, including a temperature lower than the temperature to which said slurry is heated in step (a), to produce a second effluent slurry having a normally liquid portion.

4,379,745

CARBURIZATION RESISTANCE OF AUSTENITIC STAINLESS STEEL TUBES

Richard S. Polizzotti, Milford, and Richard C. Krutenat, New Providence, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 21, 1980, Ser. No. 208,986

Int. Cl.³ C22F *1/00, 1/11*

U.S. Cl. 208—132 **7 Claims**

1. In the thermal cracking of hydrocarbons in contact with cast austenitic stainless steel pyrolysis tubes to form products including C_2–C_4 olefins and diolefins, wherein the composition of said tubes comprises about 17 to 40 wt. % chromium, 15 to 50 wt. % nickel, and 0.6 to 4 wt. % silicon, the improvement which comprises employing tubes which have been treated by a method comprising:

(a) cold-working the inner surface of said tubes to deform the surfaces to such a degree that upon the subsequent heat treatment of step (b) below, dissolution of the $M_{23}C_6$ carbides in the deformed regions will result while maintaining a refined recrystallized micrograin structure, in the deformed surface regions, to a uniform minimum depth of at least about 20 microns; and

(b) heating the cold-worked inner surfaces of said tubes, for an effective amount of time, at a temperature between their recrystallization temperature and their melting temperature, in an atmosphere which is at least oxidizing with respect to chromium.

4,379,746

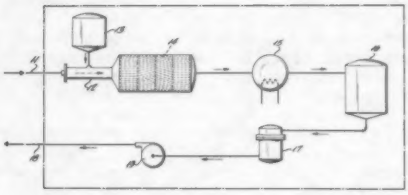
METHOD OF DESTRUCTION OF POLYCHLORINATED BIPHENYLS

Oscar L. Norman, Wilmington, Del., and Laurence H. Handler, Cherry Hill, N.J., assignors to Sun-Ohio, Inc., Canton, Ohio

Continuation of Ser. No. 179,345, Aug. 18, 1980, abandoned, which is a continuation of Ser. No. 99,341, Nov. 30, 1979, abandoned. This application Jun. 18, 1981, Ser. No. 274,928

Int. Cl.³ C10G *29/04*

U.S. Cl. 208—262 **11 Claims**



1. A field method to remove at the point of use, halogenated aromatic hydrocarbons from hydrocarbon transformer oils contaminated with said halogenated aromatic hydrocarbons which comprises removing said contaminated oil from the transformer and circulating said oil through a decontamination system at a flow rate of from about 5 to about 25 gallons per minute to effect decontamination by mixing the contaminated oil with a hydrocarbon dispersion of sodium wherein said sodium has a particle size of from about one to about twenty microns, reacting the mixture of oil and sodium dispersion at a temperature above about 75° C. up to about 150° C., passing the treated oil through separating means to remove particulate and other contaminating material and returning the treated oil essentially free of halogenated aromatic hydrocarbons back to the transformer.

4,379,747

DEMETALATION OF HEAVY HYDROCARBON OILS

Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 8, 1981, Ser. No. 299,752

Int. Cl.³ C10G *31/00, 45/00*

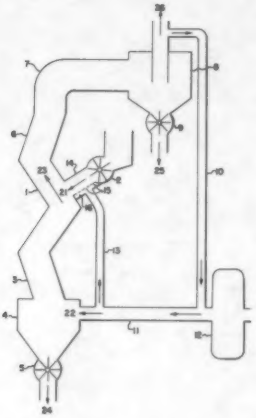
U.S. Cl. 208—251 H **17 Claims**

1. A process for heavy hydrocarbon oil demetalation which comprises (1) heating a heavy hydrocarbon oil in a first stage visbreaking zone at a temperature between about 800°–1000° F. for a residence time between about 0.1–2 hours; (2) admixing the first stage visbroken effluent with particulate coal and heating the admixture in a second stage visbreaking zone at a temperature between about 700°–850° F. for a residence time between about 0.1–2 hours; and (3) recovering the second stage visbroken effluent and fractionating it to provide liquid and solid products.

4,379,748
METHOD OF SEPARATING PAPER AND PLASTIC PIECES

Arie Hoogendoorn, Nieuw-Vennep, Netherlands, assignor to Esmil International B.V., Amsterdam, Netherlands

Filed Feb. 9, 1981, Ser. No. 232,849
Claims priority, application Netherlands, Feb. 8, 1980, 8000791
Int. Cl.³ B07B 9/02, 11/06
U.S. Cl. 209—11 12 Claims



1. In a method of separating paper and plastics, in a wetted mixture consisting substantially of paper and plastic sheeting pieces, by use of an upwardly moving stream of gas moving along a flow path into which said path said wetted mixture is passed, said path having an upward end and a downward end, the improvement comprising:

admitting a gas, for producing said upwardly moving stream of gas, into said path at an elevated temperature which is at least 60° C. but is not so high that the plastic sheeting deforms through the action of heat, and

employing said gas to effect at least partial drying of said plastic sheeting pieces such that separation will be improved, by a downward movement of said paper in said upwardly moving stream of gas and by upward movement of said plastic sheeting pieces in said upwardly moving stream of gas due to the enhanced differences in densities of said paper and said plastic sheeting.

4,379,749
WATER DEFLECTOR ASSEMBLY FOR SWIMMING POOL SKIMMERS

Daniel T. Roth, 17018 Aspen Way, Morgan Hill, Calif. 95037

Filed Jan. 13, 1981, Ser. No. 310,834
Int. Cl.³ E04H 3/16
U.S. Cl. 210—169 5 Claims

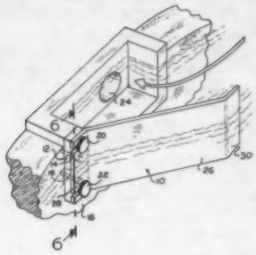
1. A water deflector assembly for deflecting water towards a skimmer provided in the wall of a swimming pool, the water deflector comprising:

(a) an adaptor block;

(b) means coupling said adaptor block proximate to said skimmer;

(c) an elongated water deflector having a substantially planar central portion, a first end portion angularly deflected from said central portion, and a second end portion angularly deflected from said central portion in a second direction substantially opposite said first direction, where said first end portion and said second end portion are substantially planar and parallel; and

(d) means attaching said first end portion to said adaptor block such that said second end portion is substantially parallel to said skimmer, and such that an upper surface of

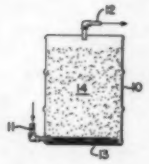


said deflector protrudes above the surface of the water within said pool.

4,379,750
FLUID-SOLIDS CONTACT DEVICE AND IMPROVED FLUID DISTRIBUTOR

Donald D. Tiggelbeck, Pittsburgh, Pa., assignor to Tigg Corporation, Pittsburgh, Pa.

Filed Sep. 4, 1981, Ser. No. 299,641
Int. Cl.³ B01D 33/38
U.S. Cl. 210—232 16 Claims



1. In a fluid-solids contact device comprising a tank containing particulate solids, a fluid inlet at the bottom of said tank and a fluid outlet at the top of said tank, the improvement comprising a fluid distributor device in the bottom of the said tank secured to the said inlet and comprising a tube-defining helix wire frame, secured at one end to said inlet, and a fabric sleeve surrounding and supported by the said tube-defining-frame whereby fluids entering the said tank pass from the said inlet through the fabric openings in the said sleeve.

4,379,751
METHOD FOR THE CHROMATOGRAPHIC SEPARATION OF SOLUBLE COMPONENTS IN FEED SOLUTION

Kenzaburo Yoritomi; Teruo Kezuka, and Mitsumasa Moriya, all of Chiba, Japan, assignors to Sanmatsu Kogyo Co., Ltd., Tokyo, Japan

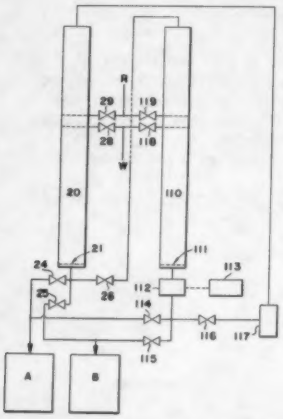
Continuation of Ser. No. 32,723, Apr. 23, 1979, Pat. No. 4,267,054, and a continuation-in-part of Ser. No. 908,455, May 22, 1978. This application Jan. 30, 1981, Ser. No. 229,930
Claims priority, application Japan, May 26, 1977, 52-62023
The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.
Int. Cl.³ B01N 15/08
U.S. Cl. 210—659 4 Claims

1. A method for the chromatographic separation of each of the soluble components of a feed solution containing as major components (1) a component A which is relatively less adsorbed by a solid adsorbent having ion-exchanging or molecular sieve action and (2) a component B which is more selectively adsorbed by said solid adsorbent having ion-exchanging or molecular sieve action, said solid adsorbent having its ad-

sorbency restored by displacing the selectively adsorbed components, where the chromatographic separation is carried out in a circulating system comprised of at least one column packed with said solid adsorbent and wherein each column in said system has at least one outlet for withdrawal of both a major component A-rich fraction and a major component B-rich fraction, through said outlet fractions other than the major component fractions are recycled to said circulating system, which method comprises the steps of:

(A) establishing within said circulating system a component concentration distribution comprising, sequentially: a major component A-rich fraction, fraction (a); a first mixed fraction containing component A and component B, fraction (b); a major component B-rich fraction, fraction (c); and a second mixed fraction containing component A and component B, fraction (d), intermediate to fraction (c) and fraction (a),

(B) withdrawing each major component fraction through



the outlet immediately dowstream in the circulating system from the position of that major component fraction in the component concentration distribution, and concurrently adding, while withdrawing each volume of said major component A-rich fraction and said major component B-rich fraction, at least one of the two liquids (1) solvent for component A and component B and (2) feed solution, said solvent being added at a position adjacent to fraction (d) and said feed solution being added at a position adjacent to fraction (b),

(C) directly recycling fractions (b) and (d) downstream in the circulating system along with added solvent and/or solution thereby re-establishing the component concentration distribution,

(D) repeating steps (B) and (C) in a cyclic manner with each major component fraction being withdrawn through an outlet downstream in the circulating system to the outlet through which that major component fraction was last withdrawn.

4,379,752

METHOD FOR DESTRUCTION OF POLYHALOGENATED BIPHENYLS

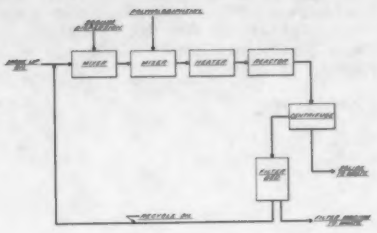
Oscar L. Norman, Wilmington, Del., assignor to Sun-Ohio, Inc., Canton, Ohio

Continuation-in-part of Ser. No. 180,752, Aug. 25, 1980, abandoned. This application Jul. 17, 1981, Ser. No. 284,047

Int. Cl.³ B01D *21/00*

U.S. Cl. 210—712 **3 Claims**

1. A continuous method for the destruction of polyhalogenated biphenyls which comprises injecting said biphenyls into a continuously circulating hydrocarbon oil to an initial concentration of from about 1% to about 3% by weight and effecting reaction in the oil circulating at about 5 to about 25 gallons per minute at a temperature above about 75° up to about 150° C.



with a dispersion of sodium in a hydrocarbon oil wherein the particle size of the sodium particles is from about one to about ten microns, separating the particulate solids that are formed and recycling said hydrocarbon oil.

4,379,753

HAIR CARE COMPOSITIONS

Raymond E. Bolich, Jr., Maineville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 119,347, Feb. 7, 1980, Pat. No. 4,345,080. This application May 28, 1981, Ser. No. 267,988

Int. Cl.³ C11D *3/48*

U.S. Cl. 252—106 **8 Claims**

1. Hair care compositions which contain from about 0.2% to about 4.0% of heavy metal, magnesium or aluminum pyridinethione salt crystals which are predominantly flat platelets having a mean sphericity less than about 0.65 and a median equivalent spherical diameter based on volume of at least about 2μ but less than about 15μ.

4,379,754

ALIPHATIC BRANCHED OLEFIN DIOXOLANES, DITHIOLANES, AND OXATHIOLANES AND USES THEREOF IN AUGMENTING OR ENHANCING THE AROMA AND/OR TASTE OF CONSUMABLE MATERIALS

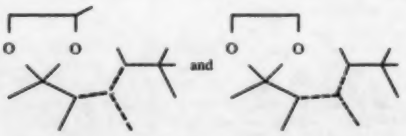
Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 212,993, Dec. 4, 1980, Pat. No. 4,315,952. This application Nov. 19, 1981, Ser. No. 322,732

Int. Cl.³ C11D *3/50, 9/44*

U.S. Cl. 252—174.11 **5 Claims**

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base, an aroma augmenting or enhancing quantity of at least one dioxolane compound defined according to the structure selected from the group consisting of:



wherein one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represent carbon-carbon single bonds.

4,379,755

GELATINIZING AGENT COMPOSITION, AND GEL AND AQUEOUS EMULSION PREPARED THEREFROM

Mikio Yamada, and Yujin Tabata, both of Tokyo, Japan, assignors to Nihon Surfactant Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 63,748, Aug. 6, 1979, abandoned. This application Oct. 31, 1980, Ser. No. 202,653
Claims priority, application Japan, Aug. 10, 1978, 53-97705
Int. Cl.³ B01F *17/34, 17/39;* B01J *13/00*
U.S. Cl. 252—312 47 Claims

1. An oil-free gelatinizing agent composition for gelatinizing oil and comprising from 5 to 98 percent by weight of (a) hydrophilic sucrose fatty-acid ester and from 95 to 2 percent by weight of (b) hydrophilic liquid polyhydric alcohol.

8. A substantially water-free and homogeneous gel composition comprising oil incorporated in a gelatinizing composition according to claim 1.

37. An aqueous emulsion which is an admixture of water with a gel composition according to claim 8 or 9.

4,379,756

REACTIVATION OF SUPPORTED CATALYSTS WHICH CONTAIN PALLADIUM, COPPER AND TELLURIUM

Hans-Martin Weitz, Bad Durkheim, and Rolf Fischer, Heidelberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 6, 1981, Ser. No. 261,277
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3022043
Int. Cl.³ B01J *37/00, 27/02*
U.S. Cl. 252—411 R 10 Claims

1. In a process for reactivating a supported catalyst which contains palladium, copper and tellurium and which has been used for the acyloxylation of unsubstituted or substituted butadiene to give butenediol esters, the improvement which comprises:

heating the used catalyst at from 200° to 900° C. under an essentially inert gas atmosphere, free of a reducing agent, for a period of time sufficient at said temperature to reactivate the catalyst while free of contact with any reactive gas.

4,379,757

TERTIARY AMINE CATALYST MIXTURES USEFUL IN CELLULAR POLYURETHANE FORMATION

Feyyaz O. Baskent, Mahopac, and Michael R. Sandner, Chappaqua, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 29, 1980, Ser. No. 191,991
Int. Cl.³ B01J *31/02*
U.S. Cl. 252—426 2 Claims

1. A catalyst mixture which comprises: (1) from about 5 to about 10 percent by weight of 2-hydroxyethyl piperazine; (2) from about 5 to about 10 percent by weight of 1,4-di-(2-hydroxyethyl) piperazine; and (3) from about 80 to about 90 percent by weight of 1,4-diazobicyclo [2.2.2] octane.

2. A catalyst mixture which comprises: (1) from about 10 to about 20 percent by weight of 2-hydroxyethyl piperazine; (2) from about 10 to about 20 percent by weight of 1,4-di-(2-hydroxyethyl) piperazine; and (3) from about 65 to about 75 percent by weight of N-ethyl morpholine.

4,379,758

CATALYST COMPOSITION FOR POLYMERIZING ETHYLENE

Burkhard E. Wagner, Highland Park; George L. Goeke; Frederick J. Karol, both of Belle Mead, all of N.J., and Kathleen F. George, Crosslanes, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 24, 1980, Ser. No. 219,877
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B 22 Claims

1. A precursor composition suitable as a component of a catalyst composition capable of producing high density ethylene homopolymers and copolymers under a pressure of less than 1000 psi with low accompanying ethylene hydrogenation, said precursor composition having the formula

$$Mg_mTi(OR)_nX_p[ED]_q$$

wherein

R is an aliphatic or aromatic hydrocarbon radical containing from 1 to 14 carbon atoms, or COR′ wherein R′ is an aliphatic or aromatic hydrocarbon radical containing from 1 to 14 carbon atoms,

X is selected from the group consisting of Cl, Br, I, and mixtures thereof,

ED is an organic electron donor compound selected from the group consisting of alkyl esters of aliphatic and aromatic acids, aliphatic ethers, cyclic ethers and aliphatic ketones,

m is 0.5 to 56,

n is 0, 1 or 2,

p is 2 to 116, and

q is 2 to 85,

said precursor composition being diluted with an inert carrier material and containing from 0.1 mol to 3.0 mols of boron halide compound per mol of electron donor in said precursor composition,

said boron halide compound having the formula

$$BR_cX'_{3-c}$$

wherein

R is an aliphatic or aromatic hydrocarbon radical containing from 1 to 14 carbon atoms or OR′, wherein R′ is an aliphatic or aromatic hydrocarbon radical containing from 1 to 14 carbon atoms,

X′ is selected from the group consisting of Cl, Br, and mixtures thereof, and

c is 0 or 1 when R is an aliphatic or aromatic hydrocarbon and 0, 1 or 2 when R is OR′.

4,379,759

IMPREGNATED POLYMERIZATION CATALYST, PROCESS FOR PREPARING, AND USE FOR ETHYLENE COPOLYMERIZATION

George L. Goeke, Belle Mead; Burkhard E. Wagner, Highland Park, and Frederick J. Karol, Belle Mead, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 12,720, Feb. 16, 1979, Pat. No. 4,302,565, which is a continuation-in-part of Ser. No. 892,322, Mar. 31, 1978, abandoned. This application May 15, 1981, Ser. No. 264,091
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B 11 Claims

1. A catalyst composition comprising a precursor composition of the formula

$$Mg_mTi_1(OR)_nX_p[ED]_q$$

wherein

R is a C_1 to C_{14} aliphatic or aromatic hydrocarbon radical, or COR′ wherein R′ is a C_1 to C_{14} aliphatic or aromatic hydrocarbon radical,

X is selected from the group consisting of Cl, Br, I or mixtures thereof,

ED is an electron donor compound,

m is ≥ 0.5 to ≤ 56,

n is 0, 1 or 2,

p is ≥ 2 or ≤ 116, and

q is ≥ 2 to ≤ 85,

said precursor composition being impregnated in a porous support and being either unactivated, or

partially activated with >0 to ≤ 10 mols of activator com-

pound per mol of Ti in said precursor composition or completely activated with >10 to $\leqq 400$ mols of activator compound per mol of Ti in said precursor composition,

said activator compound having the formula

$$Al(R'')_cX'_dH_e$$

wherein X' is Cl or OR''', R'' and R''' are the same or different, and are C_1 to C_{14} saturated hydrocarbon radicals, d is 0 to 1.5, e is 1 or 0 and $c+d+e=3$,

said electron donor compound being a liquid organic compound in which said precursor composition is soluble and which is selected from the group consisting of alkyl esters of aliphatic and aromatic carboxylic acids, aliphatic ethers, cyclic ethers and aliphatic ketones, and

said precursor composition being impregnated in said support in a weight ratio of 0.033:1 to 1:1.

4,379,760
HIGH EFFICIENCY CATALYST FOR POLYMERIZING OLEFINS

Randall S. Shipley, Alvin, Tex.; Kirby Lowery, Jr., Baton Rouge, La., and Ronald L. Gibbs, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 12, 1981, Ser. No. 320,650
Int. Cl.³ C08F 4/64
U.S. Cl. 252—429 B **7 Claims**

1. In a catalytic reaction product of (A) a tetravalent titanium compound; (B) an organomagnesium component; and (C) a halide source, however if either component (B) or (C) does not contain sufficient quantities of aluminum, then (D) an organoaluminum compound is also present, said catalytic reaction product having atomic ratios of

Mg:Ti is from about 1:1 to about 200:1;

Al:Ti is from about 0.1:1 to about 1000:1;

excess X:Al is from about 0.0005:1 to about 5:1;

the improvement which comprises employing as the tetravalent titanium compound, a mixture of (a) a tetrahydrocarbyloxytitanium compound and (b) a dihydrocarbyloxytitanium oxide in a molar ratio of (a):(b) of from about 0.1:1 to about 10:1; and wherein excess X is the amount of excess halide above that which would be theoretically required to convert the magnesium compound to the dihalide.

4,379,761
CATALYST AND PROCESS FOR MAKING SAID CATALYST

David H. Olson, Pennington, and Paul G. Rodewald, Rocky Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 9, 1981, Ser. No. 223,878
Int. Cl.³ B01J 27/14, 29/06
U.S. Cl. 252—435 **25 Claims**

1. A catalyst composition comprising a porous crystalline zeolite, having silica deposited thereon as a result of contact with a silicone compound of a molecular size incapable of entering the pores of the zeolite and subsequent heating in an oxygen-containing atmosphere to a temperature in excess of 300° C. but below a temperature at which crystallinity of the zeolite is adversely affected at a rate such that the silicone compound does not volatilize prior to undergoing oxidation to silica, said zeolite being characterized by an activity, in terms of alpha value, of between about 2 and about 5000, a xylene sorption capacity greater than 1 gram/100 grams of zeolite and an ortho xylene sorption time for 30 percent of said capacity greater than 10 minutes, said sorption capacity and sorption time being measured at 120° C. and a pressure of 4.5 ± 0.8 mm. of mercury and modified by the addition thereto of phosphorus.

4,379,762
METHOD OF PRODUCING PICTURE TUBE COATING COMPOSITIONS

Hironobu Chiyoda, Kokubunji; Hisayuki Yamazaki, Kashiwa, and Reiichiro Takabe, Kamagaya, all of Japan, assignors to Hitachi Powdered Metals Company, Ltd., Chiba, Japan

Filed Mar. 25, 1980, Ser. No. 133,952
Claims priority, application Japan, Sep. 14, 1979, 54-117381
Int. Cl.³ H01B 1/06
U.S. Cl. 252—507 **3 Claims**

1. A method of producing a graphite-based coating composition to be applied to the interior wall of a picture tube, which comprises:

mixing graphite particles having a diameter of about 2 to 3 microns, titanium oxide with a particle diameter of about 0.5 to 1.0 micron and silicon oxide having a particle diameter of about 0.007 to 0.008 microns, in water to prepare an aqueous mixture of the electroconductive particles;

spray drying said aqueous mixture to form an electroconductive powder; and

mixing said electroconductive powder with an alkali metal silicate and a dispersant in water and thoroughly agitating the resulting mixture.

4,379,763
WASTE WATER TREATMENT BY CHELATION-GELATION

Lawrence M. Clemens, and Alton J. Gasper, both of Minneapolis, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

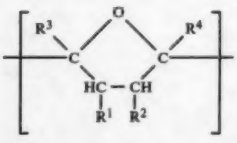
Filed Oct. 15, 1980, Ser. No. 197,130
Int. Cl.³ G21F 9/16
U.S. Cl. 252—628 **12 Claims**

1. A treatment method comprising:

(1) mixing waste water containing a contaminant chemical component with a chelating agent capable of forming a complex with said component, said chelating agent being selected from the group consisting of

(A) a polymer containing the β-hydroxyalkylene amine moiety characterized by having an equivalent weight of hydroxyalkylene amine of 87 to 10,000; and

(B) 2,5-oxolanylene polymer characterized by including recurring 2,5-oxylanylene (or oxolene) units of the formula



wherein at least 60% of the units are joined directly to one another so as to provide segments containing at least six units and wherein R^1, R^2, R^3 and R^4 are individually hydrogen or alkyl groups containing up to 8 carbon atoms

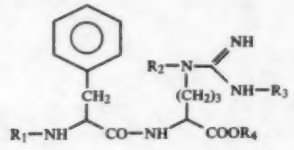
(2) mixing the resultant mixture with a water soluble polyurethane prepolymer having terminal isocyanate groups capable of being polymerized in the presence of water in a sufficient quantity to form a self-supporting transportable gelled mass.

4,379,764
PHENYLALANYLARGININE DERIVATIVES, PROCESS FOR PRODUCING SAME AND METHOD FOR MEASURING ACTIVITY OF ENZYMES USING SAME

Setsuro Fujii, Toyonaka; Mamoru Sugimito, Sakura, and Takashi Yaegashi, Funabashi, all of Japan, assignors to Torii & Co. Ltd., Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,416
Claims priority, application Japan, Sep. 16, 1980, 55-128270
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R 7 Claims

1. A phenylalanylarginine derivative represented by the formula,



(I)

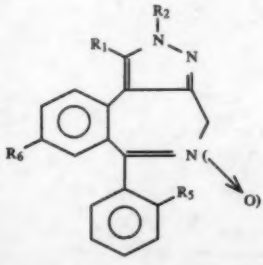
wherein R_1 represents hydrogen or an amino-protecting group; R_2 and R_3 represent hydrogen or guanidino-protecting groups; and R_4 represents naphthyl.

4,379,765
PYRAZOLOBENZAZEPINES

George F. Field, West Caldwell; Rodney I. Fryer, North Caldwell; Eugene J. Trybulski, Parsippany, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

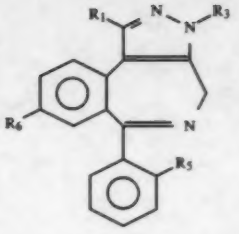
Continuation-in-part of Ser. No. 175,552, Aug. 5, 1980, abandoned. This application Jul. 23, 1981, Ser. No. 286,122
Int. Cl.³ A61K *31/55*; C07D *487/04*
U.S. Cl. 260—245.6 6 Claims

1. A compound of the formula



wherein R_1 is hydrogen or lower alkyl; R_2 is selected from the group consisting of hydrogen, lower alkyl, C_2 to C_7 carboxylic acids, hydroxy C_2 to C_7 alkyl, C_2 to C_7 carboxylic acid esters and amides and the group COR_{11} wherein R_{11} is alkoxy, amino or mono-lower alkyl amino; R_6 is nitro or halo and R_5 is hydrogen or halo
and the pharmaceutically acceptable salts thereof.

2. A compound of the formula



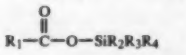
wherein R_1 is hydrogen or lower alkyl; R_3 is selected from the group consisting of hydrogen, lower alkyl, C_2 to C_7 carboxylic acids, hydroxy C_2 to C_7 alkyl, C_2 to C_7 carboxylic acid esters and amides and the group COR_{11} wherein R_{11} is alkoxy, amino or mono-lower alkyl amino; R_6 is nitro or halo and R_5 is hydrogen or halo
and the pharmaceutically acceptable salts thereof.

4,379,766
SILYL ESTERS OF CARBOXYLIC ACIDS BY PHASE TRANSFER CATALYSTS

Mark P. Mack, and Charles T. Berge, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Jun. 1, 1982, Ser. No. 383,388
Int. Cl.³ C07F *7/08*
U.S. Cl. 260—413 9 Claims

1. A method for the production of silyl esters of carboxylic acids, said ester having the general formula



comprising reacting a carboxylic acid salt with a silicon halide in the presence of phase transfer catalysts selected from the group consisting of quaternary ammonium salts, crown ethers, and cryptates, wherein R_1, R_2, R_3 and R_4 are, independently, hydrogen, alkyl groups containing from 1 to 30 carbon atoms, cycloalkyl groups, aralkyl groups, alkaryl groups, aryl groups, and bicycloalkyl groups, all containing from 6 to 30 carbon atoms.

4,379,767
MANUFACTURE OF ISOCYANATES

Vazken A. Alexanian, Darien; Peter S. Forgione, Stamford, and Laurence W. Chang, Orange, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 8, 1982, Ser. No. 355,825
Int. Cl.³ C07C *118/00, 125/03*
U.S. Cl. 260—453 P 11 Claims

1. A process for the production of tertiary benzyl isocyanates which comprises reacting a vinyl aromatic compound of the formula:

in which:

R_1 is an alkylidene group having from 1 to 3 carbon atoms,

R_2 is an alkyl group having from 1 to 3 carbon atoms, and

R_3 is a phenyl, biphenyl or naphthyl group or a substituted phenyl, biphenyl or naphthyl group having substituents selected from halogen atoms, methyl and methoxy groups and substituents of the formula:

with a carbamoyl halide in a solvent for said aromatic compound, carbamoyl halide, isocyanic acid and reaction products thereof to produce the corresponding aromatic halide and reacting said aromatic halide in said solution with isocyanic acid in sufficient excess to form the corresponding aromatic isocyanate and carbamoyl halide.

4,379,768

PROCESS FOR PRODUCING PERFLUOROSUCCINYL FLUORIDE

Masaaki Yamabe, Machida; Seiji Munekata; Seisaku Kumai, both of Tokyo, and Isamu Kaneko, Yamato, all of Japan, assignors to Asahi Glass Company, Ltd., Yamato, Japan

Filed Aug. 26, 1981, Ser. No. 296,363

Claims priority, application Japan, Aug. 26, 1980, 55-116401

Int. Cl.³ C07C *51/58*

U.S. Cl. 260—544 F **4 Claims**

1. A process for producing perfluorosuccinyl fluoride which comprises coupling accompanied by dehalogenation of a difluorohaloacetyl fluoride having the formula

$$XCF_2COF$$

wherein X represents I, Br or Cl by reacting with a trapping agent of a halogen at a temperature ranging from 100° to 500° C.

4,379,769

PROCESS FOR PREPARING ARYLSULFONYL ISOCYANATES BY PHOSGENATION OF ARYLSULFONAMIDES

George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 45,244, Jun. 4, 1979, abandoned. This application Oct. 1, 1980, Ser. No. 192,707

Int. Cl.³ C07C *143/79*

U.S. Cl. 260—545 R **14 Claims**

1. A process for preparing a 2-substituted aryl-1-sulfonyl isocyanate where the 2-substituent is an electron-withdrawing group in which an appropriately substituted arylsulfonamide is phosgenated in the presence of a catalytic quantity of a hydrocarbyl isocyanate, wherein the improvement comprises conducting the reaction in the presence of a catalytic quantity of a tertiary amine base.

4,379,770

CARBURETTORS FOR INTERNAL COMBUSTION ENGINES

Valerio Bianchi, Neuss; Anwar Abidin, Meerbusch, and Dieter Thönnessen, Viersen, all of Fed. Rep. of Germany, assignors to Bosch & Pierburg System ohG, Neuss, Fed. Rep. of Germany

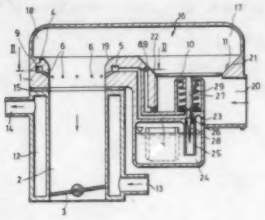
Filed Aug. 14, 1981, Ser. No. 292,736

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 3113943

Int. Cl.³ F02M *15/04*

U.S. Cl. 261—142 **18 Claims**

1. A constant pressure carburettor for an internal combustion engine, said carburettor comprising a tubular wall defining a main air flow path and a mixture chamber, fuel feeder means at the upstream end of said chamber for supplying fuel in a substantially uniform circumferential distribution onto said tubular wall, a main throttle valve downstream of said mixture chamber, means forming a heating wall in a part at least of said tubular wall between said fuel feeder means and said main throttle valve, a choke valve disposed upstream of said fuel feeder means, a metering element which regulates the rate of fuel flow from said fuel feeder means, means for opening said choke valve in dependence upon the magnitude of the air flow along said main air flow path and means operatively connecting said choke valve and said metering element to actuate said metering element in dependence upon the opening of said



choke valve, means defining an air flow stabilising conduit extending between said choke valve and said fuel feeder means, said stabilising conduit being operatively constructed to damp out or decrease vortices generated in said air flow by said choke valve before said air flow reaches said mixing chamber.

4,379,771

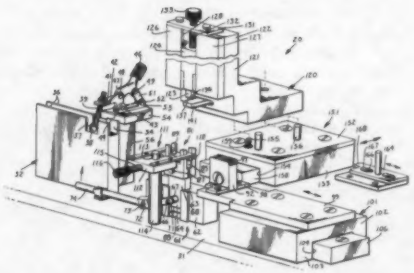
METHODS OF AND APPARATUS FOR TERMINATING A LIGHTGUIDE FIBER RIBBON

Donald Q. Snyder, Marietta, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed May 23, 1980, Ser. No. 153,104

Int. Cl.³ B29C *6/00*; B29D *11/00*; G02B *5/14*

U.S. Cl. 264—1.5 **22 Claims**



1. A method of terminating a plurality of lightguide fibers which extend from a lightguide fiber ribbon, said method comprising the steps of:

supporting opposite end portions of a first substrate in a nest at an assembly station, the substrate having a plurality of spaced parallel fiber-receiving grooves formed in at least one side thereof with the grooves oriented upwardly;

spacing apart a plurality of lightguide fibers which extend from a lightguide ribbon beyond one end of the substrate with the ribbon extending beyond the opposite end of the substrate;

moving the ribbon in a direction along its longitudinal axis so that each of the individual fibers is pulled into and along one of the fiber-receiving grooves of the substrate;

positioning a second substrate having a plurality of fiber-receiving grooves in engagement with the fibers with the grooves of the second substrate facing and being aligned with the grooves of the first substrate to enclose each of

the fibers in a passageway formed between opposed aligned grooves in the first and second substrates;

applying compressive forces to the assembly of the first and second substrates and the plurality of lightguide fibers at end portions of the assembly above the supported end portions of the first substrate and substantially along a longitudinal center line of the substrates to hold together the assembly;

moving one jaw of a vise into juxtaposition with a lower surface of the first substrate and another jaw of the vise into juxtaposition with an upper surface of the second substrate;

securing together the assembly by causing the jaws to apply predetermined compressive forces to the assembly betweeen the end portions of the assembly;

discontinuing the application of the compressive forces to the end portions of the assembly;

disengaging the nest from supportive engagement of the assembly; and

causing an encapsulating material to fill interstices between the fibers and the substrates to hold together the assembly of the fibers and the substrates.

8. An apparatus for terminating a plurality of lightguide fibers which extend from a lightguide ribbon, said apparatus comprising:

a nest for supporting a first substrate at opposite end portions of the substrate, the substrate having a plurality of spaced parallel grooves with the grooves being oriented upwardly;

means disposed adjacent one end of said nest and aligned with said nest for receiving a longitudinal end portion of a lightguide ribbon with the individual lightguide fibers extending therefrom and past the other end of said nest;

means disposed adjacent the other end of said nest for separting the lightguide fibers by spacing apart said individual lightguide fibers to facilitate the receipt of the fibers extending past said nest in the grooves formed in the first substrate and in aligned grooves of a second substrate, the first substrate having been positioned in said nest prior to said fibers being extended through said nest, and the second substrate being positioned in engagement with the fibers to enclose each of the fibers in a passageway formed between opposed aligned grooves;

means for applying compressive forces to the assembly of said substrates and said lightguide fibers at opposite ends of the assembly and along a longitudinal centerline thereof above the supported end portions of the first substrate to hold the assembly securely in said nest;

a vise which includes a lower jaw for engaging a lower surface of the first substrate and an upper jaw for engaging an upper surface of the second substrate, said vise including means for causing relative motion between said jaws to controllably apply compressive forces to the assembly; and

means mounting said vise for movement along a path of travel transverse of the fibers to facilitate said lower jaw being moved beneath the first substrate between the supported end portions of the first substrate and said upper jaw being moved above the second substrate.

4,379,772
METHOD FOR FORMING AN ELECTRODE ACTIVE LAYER OR SHEET

Frank Solomon, Great Neck, N.Y., and Charles Grun, Matawan, N.J., assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 31, 1980, Ser. No. 202,576
Int. Cl.³ B29D *27/00*; C25B *14/04, 11/12*
U.S. Cl. 264—49 **10 Claims**

1. A process for forming active layer or sheet comprising adding a dilute aqueous dispersion of polytetrafluoroethylene particles to an aqueous suspension of larger active carbon particles to discontinuously coat said active carbon particles with smaller polytetrafluoroethylene particles; fibrillating said discontinuously coated particles by shear blending at between about 15° C. and 75° C. to form an intimate mix of carbon particles having attenuated adherent polytetrafluoroethylene particles; chopping said intimate mix to yield a granular mix to reduce any compression of the intimate mix during shear blending and nonsinteringly forming said granular mix into a sheet.

4,379,773
PROCESS FOR WET SPINNING NYLON 4

Mitchell Danzik, Pinole, Calif., and J. Ronald Carpenter, Millersville, Md., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 4, 1980, Ser. No. 156,457
Int. Cl.³ D01F *6/00*
U.S. Cl. 264—184 **18 Claims**

1. A wet spinning process, for wet spinning nylon 4 filaments, which comprises the steps of:

(a) extrusion wet spinning a spinnable solution of nylon 4 dissolved in a solvent containing about from 60 to 100 wt. % formic acid and about from 40 to 0 wt. % water into an acidic aqueous coagulation bath containing a nylon 4 coagulation effective amount of alkali metal formate selected from the group consisting of sodium formate, potassium formate, lithium formate and mixtures thereof, and about from 6 to 30 wt. %, formic acid, for a sufficient time to coagulate said spun nylon 4 solution into filaments and wherein said coagulation bath is maintained at temperatures in the range of about from 35° C. up to the boiling point of said coagulation bath; and

(b) collecting said filaments.

4,379,774
PROCESS FOR THE PRODUCTION OF BIAXIALLY STRETCHED AND EMBOSSED FILM COMPOSED OF VINYL CHLORIDE POLYMERS

Heinz-Erhardt Andersen, Burgkirchen, Fed. Rep. of Germany; Jaek J. Brebels, Bocholt, Belgium; Klaus Matschke, and Franz Scheier, both of Burgkirchen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 21, 1981, Ser. No. 303,775
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1980, 3036289
Int. Cl.³ B29C *17/02*
U.S. Cl. 264—284 **5 Claims**

1. A process for the production of biaxially stretched and embossed polyvinyl chloride film which comprises

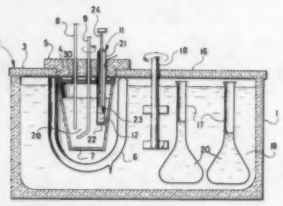
(a) biaxially stretching a polyvinyl chloride film at a stretching temperature of 90° to 160° C. at a transverse stretching ratio of 1.2:1 to 2.2:1 and a longitudinal stretching ratio of 1.7:1 to 2.5:1, the product of the transverse and longitudinal stretching ratios not exceeding 3.8:1, and

(b) immediately after stretching, before the polyvinyl chloride film stretched according to step (a) has cooled appreciably from the stretching temperature range of 90° to 160° C. utilized in step (a), embossing the film by means of an embossing unit comprising an embossing roller back-up cylinder, the temperature of the film as it comes on to the embossing roller being substantially within said stretching temperature range and the embossing roller having a temperature of −10° to +60° C. and the embossing pattern of the embossing roller being embossed into the film to a depth of embossing of 0.02 to 0.25 mm.

4,379,775
APPARATUS FOR THERMOCHEMICAL QUANTITATIVE ANALYSIS

Jiri Brandstetr; Josef Huleja, both of Brno, and Josef Kupec, Kurim, all of Czechoslovakia, assignors to Vysoke udeni technicke, Brno, Czechoslovakia

Filed Oct. 15, 1980, Ser. No. 197,274
Int. Cl.³ G01K *17/00*; G01N *25/20*
U.S. Cl. 422—51 **4 Claims**



1. An apparatus for thermochemical quantitative analysis, comprising a heat-insulated receptacle with a thermostatically controlled liquid bath, a removable part and a hinged part, the receptacle containing a Dewar vessel in which there is an exchangable reaction vessel, the receptacle further containing at least one stock bottle and at least one volumetric flask which are disposed below the hinged part of the lid and contain a solution to be analyzed and a reagent solution, respectively, the removable part of the lid which has the air-filled insulating space being retained by gravity above said reaction vessel and being provided with apertures for at least one liquid reagent dose feeder and a dose feeder for a solid sample.

4,379,776
PROCESS FOR REDUCING ALUMINUM AND FLUORINE IN PHOSPHORIC ACIDS

Gary L. Beer, Huntington Beach, and Elie Chemtob, Claremont, both of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Filed Jul. 13, 1981, Ser. No. 282,465
Int. Cl.³ C01B *25/16*
U.S. Cl. 423—321 R **5 Claims**

1. A process for removing aluminum and fluorine from impure aqueous wet process phosphoric acid analyzing, in weight percent, no more than about 45% P_2O_5, in the range of about 2 to about 4% Al_2O_3 and about 1 to about 2% F, said process comprising:

(a) aging said impure aqueous phosphoric acid at an elevated temperature of between 60°–80° C. for sufficient time to permit the formation of solid precipitate comprising an aluminum fluorophosphate of $AlFHPO_4.2H_2O$; and,

(b) separating said solid precipitate from the aged phosphoric acid.

4,379,777
PURIFICATION OF METALLURGICAL GRADE SILICON

Maher I. Boulos, Sherbrooke, Canada, assignor to Universite de Sherbrooke, Quebec, Canada

Filed Oct. 13, 1981, Ser. No. 310,726
Claims priority, application Canada, Oct. 15, 1980, 362410
Int. Cl.³ C01B *33/02*
U.S. Cl. 423—348 **5 Claims**

1. Process for preparing ultra pure silicon which comprises:

(a) continuously passing powdered and acid-leached metallurgical grade silicon through an induction plasma to melt the silicon;

(b) quenching said molten silicon particles whereby upon solidification of the molten particles, a portion of the impurities therein migrates to the surface of the granules obtained;

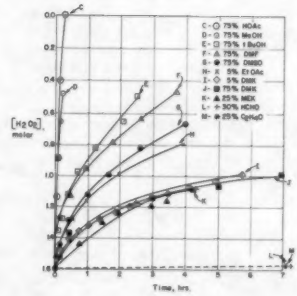
(c) acid-leaching the surface impurities of the granules obtained in step (b); and

(d) after drying the granules obtained, repeating steps (a), (b), and (c) until a silicon of the desired purity is obtained.

4,379,778
HYDROGEN PEROXIDE SYNTHESIS

Augustine I. Dalton, Jr., and Ronald W. Skinner, both of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 10, 1980, Ser. No. 195,829
Int. Cl.³ C01B *15/02*
U.S. Cl. 423—584 **15 Claims**



1. In a process for producing hydrogen peroxide by contacting a mixture of hydrogen and oxygen with a previously-reduced palladium catalyst supported on a carbon base in the presence of an aqueous liquid, containing an acid and a non-acidic oxygen-containing organic compound, capable of inhibiting the decomposition of the thus-produced hydrogen peroxide, the improvement comprising pretreating the catalyst with a ketone or aldehyde before contacting the thus-pretreated catalyst with hydrogen and oxygen in the aqueous medium.

10. In a process for producing hydrogen peroxide with a mixture of gases comprising hydrogen and oxygen with a palladium catalyst supported on a carbon base in the presence of an aqueous liquid, containing an acid and a non-acidic oxygen-containing organic compound, capable of inhibiting the decomposition of thus-produced hydrogen peroxide, the improvement wherein the carbon base is non-graphitic and has a surface area greater than 400 m^2/g and wherein the palladium catalyst is prepared by impregnating the carbon base with a soluble palladium compound, drying the thus-impregnated carbon base and reducing the palladium compound with which the carbon base is impregnated to palladium with hydrogen at 40°–140° C.

14. In a process for producing hydrogen peroxide by contacting a mixture of gases comprising hydrogen and oxygen

with a previously-reduced palladium catalyst supported on a carbon base in the presence of an aqueous liquid, containing an acid and a non-acidic oxygen-containing organic compound, capable of inhibiting the decomposition of the thus-produced hydrogen peroxide, the improvement comprising pretreating the catalyst with a dilute solution of HCl before contacting the thus-pretreated catalyst with hydrogen and oxygen in the aqueous medium.

4,379,779

EQUILIN HAPTEN AND ASSAY METHOD

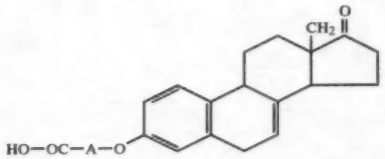
Pemmaraju N. Rao; Robert H. Purdy, and Perry H. Moore, Jr., all of San Antonio, Tex., assignors to American Home Products Corporation, New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,805

Int. Cl.³ G01N *33/54, 33/56;* C07G *7/00;* C07J *13/00*

U.S. Cl. 436—543 **10 Claims**

1. A compound of the formula



wherein A is an alkylene group of one to six carbon atoms.

4,379,780

17 α-DIHYDROEQUILIN HAPTEN AND ASSAY METHOD

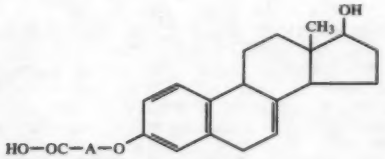
Pemmaraju N. Rao, San Antonio, Tex., assignor to American Home Products Corporation, New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,807

Int. Cl.³ G01N *33/54, 33/56;* C07G *7/00;* C07J *13/00*

U.S. Cl. 436—543 **10 Claims**

1. A compound of the formula



wherein A is an alkylene group of one to six carbon atoms.

3. An immunogen comprising the compound of claim **1** conjugated to an immunological carrier.

6. The antibody produced by injecting the immunogen of claim **3** into a host animal.

8. In a radioimmunossay procedure of 1,3,5(10),7-estratetraene-3,17α-diol in a sample employing radiolabeled 1,3,5(10),7-estratetraene-3,17α-diol and an antibody for binding 1,3,5(10),7-estratetraene-3,17α-diol and radiolabeled 1,3,5(10),7-estratetraene-3,17α-diol, the improvement which comprises employing the antibody of claim **6** or claim **7** in said radioimmunoassay procedure.

4,379,781

ANTIBIOTIC COMPOSITIONS

Robert N. Hull, Greenwood, and Robert S. Gordee, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 107,239, Dec. 26, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 241,809

Int. Cl.³ A61K *35/00*

U.S. Cl. 424—114 **3 Claims**

1. The synergistic antibiotic composition useful for inhibiting the growth of resistant mycoplasma in mammalian tissue cultures comprising the macrolide antibiotic tylosin or a pharmaceutically acceptable salt thereof and the aminoglycoside antibiotic tobramycin or a pharmaceutically acceptable salt thereof in a weight ratio of tylosin to tobramycin or the pharmaceutically acceptable salts thereof of about 12:1 to about 0.5:12.

4,379,782

LOW-CALORIE FOODS

Herbert W. Staub, Hightstown, N.J.; Larry M. Schanbacher, Yorktown Heights, N.Y.; Jack D. Zencheck, Croton-on-Hudson, N.Y., and Cynthia L. Young, Irvington, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 135,597, Mar. 31, 1980, Pat. No. 4,304,768. This application Oct. 7, 1981, Ser. No. 309,536

The portion of the term of this patent subsequent to Dec. 8, 1998, has been disclaimed.

Int. Cl.³ A61K *31/70, 31/725*

U.S. Cl. 424—180 **7 Claims**

1. A low-calorie foodstuff containing edible polysaccharides, polyols or combinations thereof in excess of 10% by weight of the foodstuff, dry basis, and an amount of a cellulose-containing dietary fiber composition effective to reduce diarrhea induced by said polysaccharide, polyol, or combinations thereof, said amount being from ½ to 2 times the combined level of polysaccharides and polyols and said fiber composition being derived from the group consisting of pineapple core, sugar beet pulp and combinations thereof.

4,379,783

TRIALKYLSILICON-CONTAINING PHENYLCYCLOALKANE ANALGESICS

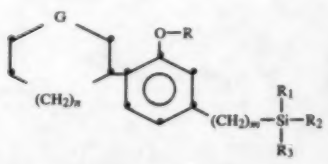
Lawrence S. Melvin, Jr., Ledyard, and Michael R. Johnson, Gales Ferry, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed May 24, 1982, Ser. No. 381,591

Int. Cl.³ A61K *31/695;* C07F *7/08*

U.S. Cl. 424—184 **11 Claims**

1. A compound having the formula



or a pharmaceutically acceptable salt thereof, wherein:

G is hydroxymethylene or carbonyl;

R is hydrogen or alkanoyl having from one to seven carbon atoms;

R_1 and R_2 are methyl or ethyl;

R_3 is an alkyl of from five to seven carbon atoms;

m is 0 or 1; and

n is 1, 2 or 3.

10. A pharmaceutical composition comprising a pharmaceutically acceptable carrier or diluent and an analgesic, tranquilizer, sedative, antianxiety, anticonvulsant, antidiarrheal or

antiemetic effective amount of a compound of claim 1 or claim 2.

4,379,784

PYRIMIDINYL UREIDO PENICILLINS

Roland Maier; Bernd Wetzel; Eberhard Woitun, all of Biberach; Wolfgang Reuter, Laupertshausen; Uwe Lechner, Ummendorf, and Hanns Goeth, Biberach, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae Gesellschaft mit beschränkter Haftung, Biberach an der Riss, Fed. Rep. of Germany

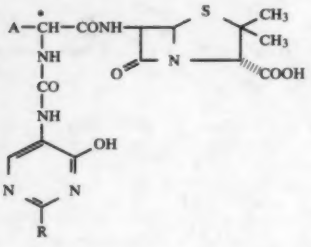
Filed Nov. 20, 1981, Ser. No. 323,383

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, 3045908; Dec. 12, 1980, 3046839

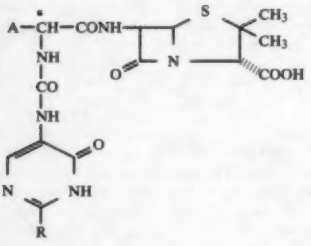
Int. Cl.³ A61K *31/505, 31/635;* **C07D** *499/70*

U.S. Cl. 424—229 **8 Claims**

1. A compound of the formula



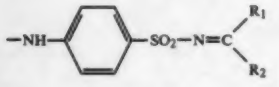
or

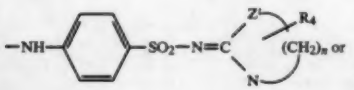


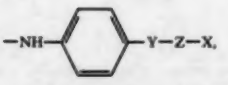
wherein

A is phenyl, 4-hydroxy-phenyl, 2-thienyl or 3,4-dihydroxy-phenyl; and

R is







where

R_1 and R_2 are each methylmercapto or amino;

Z′ is oxygen, sulfur or $=NR_3$;

R_3 is hydrogen, alkyl of 1 to 3 carbon atoms or hydroxy-(alkyl of 1 to 3 carbon atoms);

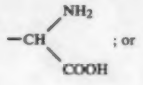
R_4 is hydrogen, hydroxyl, hydroxymethyl or methyl;

n is 2, 3 or 4;

Y is $—SO_2NH—$, —SO— or $—SO_2—$;

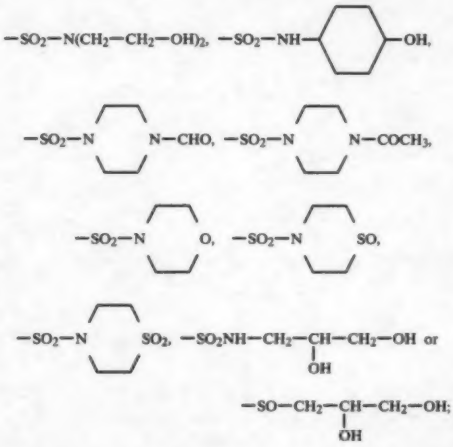
Z is straight or branched alkylene of 1 to 3 carbon atoms;

X is hydroxyl, aminocarbonyl, aminosulfonyl, formylamino, acetylamino, amino, methylsulfinyl, methylsulfonyl or



or

—Y—Z—X is



or a non-toxic, pharmacologically acceptable salt thereof formed with an inorganic or organic base.

7. An antibacterial pharmaceutical composition consisting essentially of an inert pharmaceutical carrier and an effective antibiotic amount of a compound of claim 1.

4,379,785

HETEROCYCLIC SUBSTITUTED SULFONYL UREAS, AND THEIR USE

Rudi Weyer, Kelkheim; Volker Hitzel, Hofheim am Taunus; Karl Geisen, Frankfurt am Main, and Günter Regitz, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

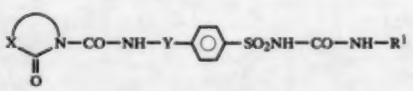
Filed Dec. 17, 1980, Ser. No. 217,524

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951135

Int. Cl.³ A61K *31/40, 31/44;* **C07D** *207/38, 209/46*

U.S. Cl. 424—244 **6 Claims**

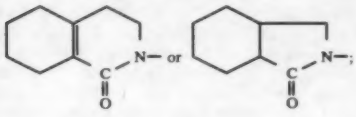
1. A sulfonyl urea of the formula



or a physiologically acceptable salt thereof, wherein

X is alkylene or alkenylene having from 3 to 6 carbon atoms, optionally substituted by up to 3 alkyl groups each having from 1 to 4 carbon atoms, or by phenyl;
or the group

is a bicyclic system of the formula



and

Y is alkylene having 2 or 3 carbon atoms;

R^1 is alkyl having from 4 to 6 carbon atoms, cycloalkyl, alkylcycloalkyl, dialkylcycloalkyl, cycloalkylalkyl, cycloalkenyl, or alkylcycloalkenyl in each case having 4 to 9 carbon atoms, or is methylcyclopentylmethyl, cyclohexenylmethyl, chlorocyclohexyl, methoxycyclohexyl, bicycloheptyl, bicycloheptenyl, bicycloheptylmethyl, bicycloheptenylmethyl, bicyclooctyl, nortricyclyl, adamantyl, or benzyl.

5. A pharmaceutical composition for lowering the blood sugar level, which comprises a hypoglycemically effective amount of a sulfonyl urea or salt thereof as in claim 1 in combination with a pharmaceutically acceptable carrier therefor.

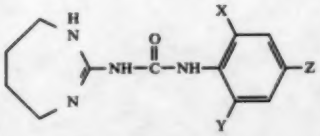
4,379,786
N-ARYL-N-(4,5,6,7-TETRAHYDRO-1H-1,3, DIAZEPIN-2-YL)UREAS AS ANTIHYPERTENSIVES

Chris R. Rasmussen, Ambler, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Division of Ser. No. 159,987, Jun. 16, 1980, abandoned. This application Sep. 28, 1981, Ser. No. 306,270
Int. Cl.³ A61K *31/55*
U.S. Cl. 424—244 6 Claims

1. A method of reducing arterial pressure in a hypertensive animal which comprises administering to said hypertensive animal, a therapeutically-effective antihypertensive amount of a compound selected from the group consisting of

(a) an N-aryl-N'-(4,5,6,7-tetrahydro-1H-1,3,-diazepin-2-yl)urea having the formula:



wherein X is Br, Cl, F, CH_3, CF_3 or OCH_3; Y is H, Br, Cl, F, CH_3, CF_3 or OCH_3; and Z is H or F; and

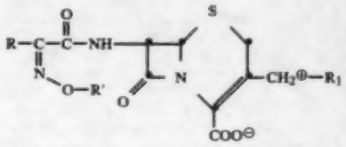
(b) a pharmaceutically-acceptable salt thereof.

4,379,787
OXIMINO-SUBSTITUTED CEPHALOSPORIN COMPOUNDS

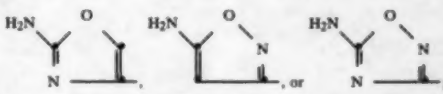
William H. W. Lunn, and William J. Wheeler, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 2, 1981, Ser. No. 307,985
Int. Cl.³ C07D *501/40*; A61K *31/545*
U.S. Cl. 424—246 23 Claims

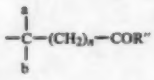
1. A compound of the formula



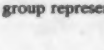
wherein R is an amino-substituted heterocyclic of the formula



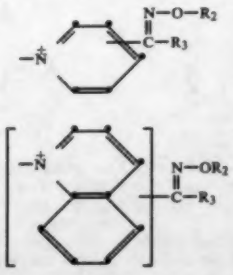
R' is hydrogen, C_1–C_4 alkyl, a carboxy-substituted alkyl or a carboxy-substituted cycloalkyl group of the formula



wherein a and b when taken separately are independently hydrogen or C_1–C_3 alkyl, and a and b when taken together with the carbon atom to which they are bonded form a C_3–C_7 carbocyclic ring; n is 0–3; and R'' is hydroxy, C_1–C_4 alkoxy, amino OR°, wherein R° is a carboxy-protecting group, R' is a carbamoyl group of the formula



wherein R''' is C_1–C_3 alkyl, phenyl, or C_1–C_3 alkyl substituted by phenyl; $\oplus R_1$ is an oximino-substituted pyridinium, quinolinium, or isoquinolinium group represented by the formulas



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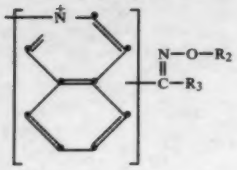


wherein R_2 and R_3 independently are hydrogen or C_1–C_3 alkyl; and the pharmaceutically acceptable non-toxic salts thereof.

4,379,788

2-PHENYL-PYRIMIDONES

Joachim Heider, Warthausen; Volkhard Austel, Biberach; Wolfgang Eberlein, Biberach; Rudolf Kadatz, Biberach, all of Fed. Rep. of Germany, and Christian Lillie, Vienna, Austria, assignors to Dr. Karl Thomae Gesellschaft mit beschränkter Haftung, Biberach an der Riss, Fed. Rep. of Germany

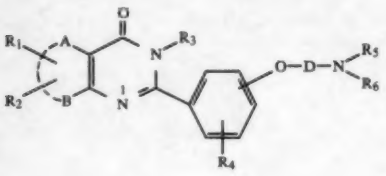
Filed Dec. 4, 1981, Ser. No. 327,348

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1980, 3046871; Apr. 16, 1981, 3115447

Int. Cl.³ A61K *31/505;* **C07D** *239/91*

U.S. Cl. 424—251 **9 Claims**

1. A compound of the formula



wherein

A and B, together with each other and the respective carbon atoms to which they are attached, form a phenyl or pyridine ring;

R_1 is hydrogen, halogen, amino, nitro, alkyl or 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms;

R_2 is hydrogen or alkoxy of 1 to 3 carbon atoms;

D is alkylene of 3 to 4 carbon atoms or hydroxy(alkylene of 3 to 4 carbon atoms);

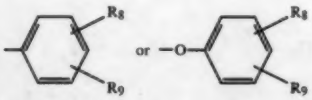
R_3 and R_5, which may be identical to or different from each other, are each hydrogen or alkyl of 1 to 3 carbon atoms;

R_4 is hydrogen or alkoxy of 1 to 3 carbon atoms; and

R_6 is straight or branched alkyl of 1 to 6 carbon atoms or —E—R_7;

where E is straight alkylene of 2 to 4 carbon atoms or hydroxy-substituted straight alkylene of 2 to 4 carbon atoms, and

R_7 is



where R_8 and R_9 are each hydrogen, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

9. The method of lowering the blood pressure or alleviating cardiac arrhythmia in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective hypotensive or antiarrhythmic amount of a compound of claim 1.

4,379,789

ANALGESIC COMPOSITION

Robert J. Capetola, Doylestown, Pa., and John L. McGuire, Whitehouse Station, N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Continuation-in-part of Ser. No. 104,495, Dec. 17, 1979, Pat. No. 4,315,936. This application May 29, 1981, Ser. No. 265,297

The portion of the term of this patent subsequent to Feb. 16, 1999, has been disclaimed.

Int. Cl.³ A61K *31/485*

U.S. Cl. 424—260 **6 Claims**

1. A method of controlling pain in mammals which comprises administering to a mammal an effective amount of a composition comprising from about 10 to 600 mg of a-methyl-4-[2-thienylcarbonyl)benzene acetic acid and from about 1 to 80 mg of a centrally-acting analgesic selected from codeine, and butorphanol.

4,379,790

(EROLINYL)-N,N-DIETHYLUREA DERIVATIVES, AND THEIR PREPARATION AND USE

Reinhard Horowski; Wolfgang Kehr; Gerhard Sauer; Ulrich Eder, and Hans P. Lorenz, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

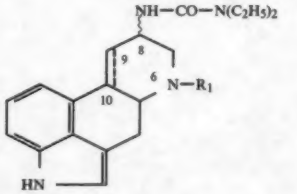
Continuation of Ser. No. 159,280, Jun. 13, 1980, abandoned. This application Jan. 6, 1982, Ser. No. 337,355

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1979, 2924102; Apr. 28, 1980, 3016691

Int. Cl.³ A61K *31/475;* **C07D** *457/12*

U.S. Cl. 424—261 **39 Claims**

1. An ergolinyl-N',N'-diethylurea of the formula

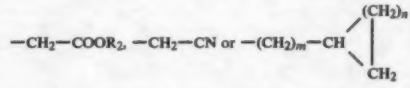


or a pharmaceutically acceptable salt thereof,

wherein

R_1 is alkyl of 2–6 carbon atoms, alkyl of 2–6 carbon atoms substituted by

$COOR_2$ or —CN, $-(CH_2)_n-CH=CH_2$, $-(CH_2)_n-C\equiv CH$,



$-CH_2-COOR_2$, $-CH_2-CN$ or $-(CH_2)_m-CH$

n is 1, or 2,

m is 0 or 1,

R_2 is alkyl of 1–6 carbon atoms,

is a CC single bond or a CC double bond, and the 8-positioned urea residue can be in the α- or β-position.

38. A method of treating Parkinsonism in a patient which

comprises administering to the patient an amount of a compound of claim 1 effective to treat Parkinsonism.

39. A method of inhibiting lactation in a female patient which comprises administering to the patient an amount of a compound of claim 1 effective to inhibit lactation.

4,379,791

4-(SUBSTITUTED THIAZOLYL)-3-HYDROXY-3-PYRROLINE-2,5-DIONE INHIBITORS OF GLYCOLIC ACID OXIDASE

Edward J. Cragoe, Jr., Lansdale; Clarence S. Rooney, Worcester, both of Pa., and Haydn W. R. Williams, Ormeaux, Canada, assignors to Merck & Co., Inc., Rahway, N.J.

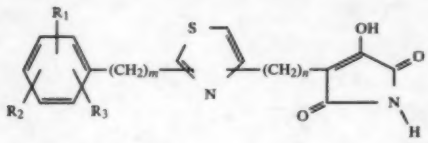
Division of Ser. No. 74,465, Sep. 11, 1979, Pat. No. 4,298,743. This application Jun. 1, 1981, Ser. No. 269,159

The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.

Int. Cl.[3] **C07D** *417/04;* **A61K** *31/425*

U.S. Cl. 424—270 **2 Claims**

1. A pharmaceutical composition for treating persons afflicted with calcium oxalate renal lithiasis or preventing the formation of calcium oxalate kidney or bladder stones comprising a pharmaceutically acceptable carrier and an effective amount of a compound of the formula:



wherein

n is 0 to 2;

m is 0 to 3;

R_1, R_2 and R_3 are indeptendently hydrogen, halogen, loweralkyl containing 1 to 6 carbons, trifluoromethyl, and loweralkoxy containing 1 to 6 carbons or pharmaceutically acceptable salts thereof, with the proviso that the substituents on the thiazolyl ring are not adjacent.

4,379,792

ANTI-INFLAMMATORY COMPOSITION

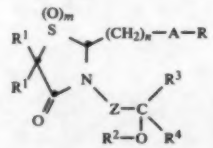
Edward H. Blaine, Chalfont, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 316,625, Oct. 30, 1980, abandoned. This application Dec. 21, 1981, Ser. No. 332,434

Int. Cl.[3] **A61K** *31/40, 31/425*

U.S. Cl. 424—270 **6 Claims**

1. A pharmaceutical composition useful for treating inflammation containing (i) a renal vasodilator compound of the formula



wherein

R is carboxy, a carboxy salt, a carboxy ester of the formula $COOR^5$ wherein R^5 is C_{1-10} alkyl,, or $CONHR^6$ wherein R^6 is amino or methylsulfonyl;

A is a p-phenylene or a m-phenylene or substituted phenylene derivative in which one or two of the phenylene hydrogens is replaced by a methyl or a halo substituent;

n is 3 or 4;

m is 0, 1, or 2;

R^1 is hydrogen, deuterium, or methyl;

Z is alkylene or unsaturated alkylene having from 2–3 carbon atoms;

R^2 is hydrogen or lower alkanoyl;

R^3 is hydrogen or straight chain C_{1-3} alkyl; and

R^4 is lower straight chain or branched alkyl having from 3–7 carbon atoms, an unsaturated alkyl having from 3–7 carbon atoms, or a substituted lower alkyl selected from polyfluoro alkyl of from 3–7 carbon atoms and lower alkoxy methylene; or

R^3 and R^4 taken together with the carbon atom connecting R^3 and R^4 is a cyclic substituent selected from a bridged or unbridged alicyclic ring of from 5–9 carbon atoms or a heterocyclic ring containing sulfur or oxygen and from 5–7 ring-forming carbon atoms. and (ii) inclomethacin wherein the weight ratio i:ii ranges from 1.7:1 to 1:26.

4,379,793

PROCESS FOR SYNTHESIS OF ESTERS OF N-(4'-HYDROXYPHENYL)ACETAMIDE WITH DERIVATIVES OF 5-BENZOIL-1-METHYL PYRROLE-2-ACETIC ACIDS

Jose-Maria Calzada Badia; Antonio Boleda Vila; Jose Sabater Sanmartin, and Maria J. Villazon Meneses, all of Barcelona, Spain, assignors to Calzada y Cia, S.R.C., Barcelona, Spain

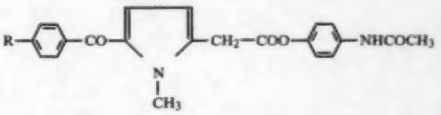
Filed Jul. 20, 1981, Ser. No. 285,341

Claims priority, application Spain, Nov. 11, 1980, 497.136

Int. Cl.[3] **A61K** *31/40;* **C07D** *207/09*

U.S. Cl. 424—274 **3 Claims**

1. A compound of the formula:



wherein R is a C_1–C_4 alkyl group or a halogen atom and the pharmaceutically acceptable salts thereof.

4,379,794

PROCESS FOR PREPARING COOKED BACON HAVING REDUCED LEVELS OF N-NITROSAMINES

Richard F. Theiler, Scottsdale, Ariz., assignor to Armour and Company, Phoenix, Ariz.

Continuation-in-part of Ser. No. 196,816, Oct. 14, 1980, Pat. No. 4,315,015. This application Dec. 28, 1981, Ser. No. 335,040

The portion of the term of this patent subsequent to Feb. 9, 1999, has been disclaimed.

Int. Cl.[3] **A23B** *4/02*

U.S. Cl. 426—266 **10 Claims**

1. A process for preparing cured bacon which, when cooked for consumption, contains substantially reduced levels of N-nitrosamines, said process comprising the steps of nitrite-curing, heat processing and slicing bacon bellies and then applying to the resulting slices, before cooking, (a) a liquid smoke in concentration to provide 5 to 400 ppm phenols and 10 to 2000 ppm carbonyl compounds based upon the weight of the sliced bacon, and (b) from 150 to 10,000 ppm of reducing sugar, based upon the weight of the sliced bacon.

4,379,795

METHOD FOR COATING A FOOD PRODUCT ON A STICK

Glenn E. Walser, Lubbock, Tex., assignor to Automated Food Systems, Inc., Lubbock, Tex.

Filed Apr. 3, 1978, Ser. No. 893,011
Int. Cl.³ A23L *1/00*; A47J *37/12*; A23G *3/24*
U.S. Cl. 426—304 21 Claims

1. In the method of preparing and cooking coated food articles impaled upon a stick which includes the steps of:

dipping the food articles in batter, in order to coat said food articles, thereafter immersing said coated food articles within hot grease in a fry tank in order to fry said coating and said food articles, thereafter removing the food articles from the fry tank;

the improvement comprising the steps of:

clasping a plurality of the sticks on which the food articles are impaled with clamps, thereby suspending a plurality of food articles impaled upon sticks from clamp means, then performing said dipping step, thereafter revolving said clamp means about its axis in order to

(i) remove the food articles from the location of said coating substance,

(ii) distribute the coating on said food articles, and

(iii) place said food articles within the fry tank in order to perform said immersing step, then again revolving said clamp means about its axis in order to

(i) perform said removal of said food articles from a fry tank, and

(ii) place said sticks and said food articles in a position wherein said food articles and sticks are conveniently disposed for unclasping, and finally

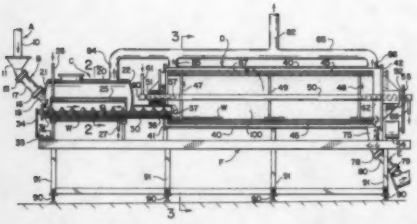
unclasping said sticks from said clamp means.

4,379,796

METHOD OF CONCENTRATING FRESH FRUITS

David R. Gross, Orrville, Ohio, assignor to The J. M. Smucker Company, Orrville, Ohio

Filed May 22, 1981, Ser. No. 266,203
Int. Cl.³ A23N *1/00*; A23L *1/212*
U.S. Cl. 426—486 6 Claims



1. A method of concentrating fresh fruit comprising the steps of:

(A) subjecting a mass of fruit to a vacuum pressure sufficiently below atmospheric to cause air and liquid in the cells of the fruit to pass through the walls of the cells with the rate of change from atmospheric to the vacuum pressure being sufficiently low that the differential pressures between the inside and outside of the cells are insufficient to create forces to rupture the cell walls while maintaining the temperature of the fruit below the boiling point of water at the vacuum pressure maintained until a major portion of the free air in the cells or dissolved in the cell liquid has evolved through the walls of the cells as indicated by a substantial reduction in foaming of the evolving liquids due to the evolution of the air;

(B) then moving said deaerated fruit longitudinally through a smooth-surfaced, rotating, heated cylinder at a vacuum pressure sufficiently below atmospheric as to cause liquid in the cells of the fruit to continuously migrate to and coat the surfaces of the fruit and the inner walls of the cylinder as the cylinder rotates and sufficiently above zero pressure that the differential pressures between the inside and outside of the cells are insufficient to rupture the cell walls:

(a) the temperature of the cylinder walls being above the boiling temperature of water at said vacuum pressure whereby as the cylinder rotates, the water in the liquid coating on the walls of the cylinder rapidly evaporates;

(b) the rate of rotation being low enough that the fruit is not appreciably tumbled but slides in contact with the walls of the cylinder but fast enough in relation to the temperature of the cylinder walls that at least a major portion of the walls of the cylinder are continuously wetted by the liquid coating; and,

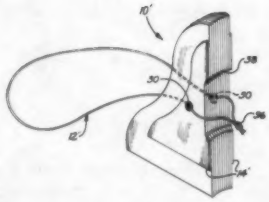
(C) continuing the last step until the desired amount of water has been removed from the fruit.

4,379,797

AUTOMATICALLY EXPANDING POP-UP DECORATION

Bernard M. Cole, 7 Park Dr. East, Old Westbury, N.Y. 11568

Continuation-in-part of Ser. No. 285,033, Jul. 20, 1981, Pat. No. 4,374,877. This application Aug. 28, 1981, Ser. No. 297,207
Int. Cl.³ G09F *1/00*
U.S. Cl. 428—9 10 Claims



1. An automatically expanding pop-up decoration for use in gift-wrapping a package comprising:

(A) an ornament having a pair of opposed end members and an expansible structure pivotally joining said end members together, said end members being capable of pivoting between a substantially face-to-face relationship and a substantially edge-to-edge relationship, said ornament being substantially flat when said end members are in a substantially face-to-face relationship and having a substantially upstanding portion when said end members are in a substantially edge-to-edge relationship; and,

(B) an elasticized cord in the form of a continuous loop operatively engaging said ornament end members so that application of said cord about a package so as to tension said cord automatically causes said ornament end members to pivot into the substantially edge-to-edge relationship.

4,379,798

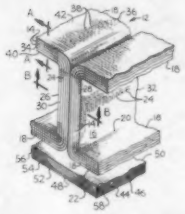
INTEGRAL WOVEN REINFORCEMENT FOR STRUCTURAL COMPONENTS

Raymond J. Palmer, Newport Beach, Calif., and Dominique Micheaux, Villette d'Anthon, France, assignors to McDonnell Douglas Corporation, Long Beach, Calif. and Brochier & Fils, Villeurbanne, France

Filed Jan. 8, 1982, Ser. No. 338,095
Claims priority, application France, Jan. 12, 1981, 81 00498
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—113 21 Claims

1. In a three-dimensional multilayer woven reinforcement member for structural components having a thicker area and a

divided thinner area, in which the fibers are distributed in the fabric in three different directions generally perpendicular to each other and in which the layers of warp and fill fibers in two directions form a layered assembly, the fibers of which layers do not cross the plane of adjacent layers, the upper layer and the lower layer of the assembly being composed of fill fibers, at least one tie yarn passing in a third direction through the above noted assembly of layers of warp and fill fibers, the tie yarns



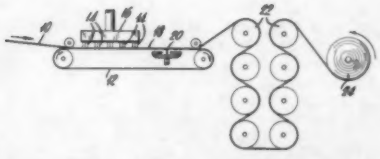
passing back and forth over the fill fibers of the outside layers so as to form therewith a fabric containing inner layers of warp and fill fibers; the improvement comprising providing one area of the assembly in which the layers of warp and fill fibers are tied together throughout their entire thickness, and other areas in which the above noted layers are separated into two individual groups, each group being tied in the manner set forth above by said tie yarns.

4,379,799

NONWOVEN FABRIC HAVING THE APPEARANCE OF APERTURED, RIBBED TERRY CLOTH

Rory A. Holmes, Kendall Park, and Donald V. Skistimas, Milltown, both of N.J., assignors to Chicopee, New Brunswick, N.J.

Filed Feb. 20, 1981, Ser. No. 236,401
Int. Cl.³ D04H *3/08;* D06C *1/06*
U.S. Cl. 428—131 **3 Claims**



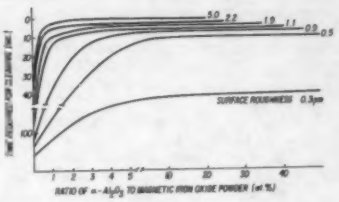
1. A nonwoven fabric composed of staple fibers, and having the appearance of apertured, ribbed terry cloth, said fabric being characterized by a repeating pattern of spaced, parallel, raised ribs of entangled staple fibers, which ribs extend in one fabric direction, with the ribs being interconnected by spaced bundles of straight unentangled, substantially parallel staple fiber segments, wherein said bundles are substantially parallel to one another and substantially perpendicular to said ribs, wherein adjacent bundles and the ribs which they interconnect define apertures, and wherein said ribs are substantially wholly entangled throughout and appear uniform and substantially nonpatterned.

4,379,800

CLEANING TAPE FOR MAGNETIC RECORDING APPARATUS

Nobuhiro Sato, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 274,740, Jun. 18, 1981, abandoned. This application May 3, 1982, Ser. No. 374,098
Claims priority, application Japan, Jun. 20, 1980, 55-83660
Int. Cl.³ B05D *5/12;* D06N *7/04*
U.S. Cl. 428—148 **5 Claims**



1. A cleaning tape for a magnetic recording apparatus which comprises a substrate coated with a cleaning layer comprising magnetic iron oxide powder as a main component and non-magnetic abrasive powder having Moh's scale of hardness of at least 6 and a binder wherein said cleaning layer has a surface roughness of 0.5 to 5 μm and a ratio of said non-magnetic abrasive powder to said magnetic iron oxide powder of 0.3 to 40 wt.% and especially 3 to 40 wt.% in the case of said surface roughness of 0.5 to 1 μm; 0.5 to 20 wt.% in the case of said surface roughness of 1 to 2 μm; 0.3 to 10 wt.% in the case of said surface roughness of 2 to 5 μm.

4,379,801

STAMPABLE REINFORCED THERMOPLASTIC POLYESTER SHEETS

James C. Weaver, and Robert W. Seymour, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 21, 1982, Ser. No. 370,318
Int. Cl.³ B32B *15/00, 17/00*
U.S. Cl. 428—220 **12 Claims**

1. A stampable sheet of reinforced thermoplastic material having on at least one surface of the sheet a smooth surface suitable for use as exterior automotive panels and the like, said sheet comprising:

a plurality of layers of polymeric material and a plurality of layers of fibrous reinforcing material alternating with said layers of polymeric material, all of said layers being integrally formed together and the outer layers of said sheet being of a crystallizable material selected from poly(ethylene terephthalate), copolymers of poly(ethylene terephthalate) and blends thereof, poly(1,4-cyclohexanedimethylene terephthalate), copolymers of poly(1,4-cyclohexanedimethylene terephthalate) and blends thereof having a minimum crystallization half-time upon heating of one minute or less, the minimum crystallization half-time being that as measured with respect to each individual layer of said outer layers;

a layer of surfacing mat of fine stranded glass of continuous filaments randomly patterned, having a weight of about 0.1 to about 0.4 oz./sq. ft., and positioned contiguously with respect to one of said outer layers of said sheet; and

a layer of polymeric material positioned contiguously with the side of said surfacing layer opposite from said one of said outer layers of said sheet; having a shrinkage of less than about 2%, as determined in accordance with ASTM Method D-955, and a minimum crystallization half-time of one minute or less, and being selected from

a. copolymers of poly(1,4-cyclohexylenedimethylene 1,4-

cyclohexanedicarboxylate) with about 10 to about 30 mole percent dimer acid;

b. a polyetherester comprised of

1. a dicarboxylic acid component comprised of

A. 100 to 60 mole percent terephthalic acid, and

0 to 40 mole percent of an aliphatic or aromatic dicarboxylic acid having a molecular weight of less than 300, and

2. a diol component comprised of

A. a glycol comprised of 100 to 60 mole percent tetramethylene glycol and 0 to 40 mole percent of an aliphatic or aromatic glycol having a molecular weight of less than 300, and

B. 10 to 60 weight percent, based on the weight of the polyetherester, of a poly(alkylene oxide) glycol having 2, 3 or 4 carbon atoms in the repeating unit and having a molecular weight in the range of 400 to 5000,

wherein the sum of the total mole percent amount of aliphatic or aromatic dicarboxylic acid having a molecular weight of less than 300 in item b.1.B, the mole percent amount of aliphatic or aromatic glycol having a molecular weight of less than 300 in item b.2.A., and the weight percent, based on the weight of the polyetherester, of the poly(alkylene oxide) glycol in item b.2.B. equals at least 25 but does not exceed 80;

c. a polyetherester comprised of

1. a dicarboxylic acid component comprised of

A. 100 to 98 mole percent terephthalic acid, and

B. 0 to 2 mole percent of a trifunctional carboxylic acid of molecular weight less than 300;

2. a diol component comprised of

A. a glycol comprised of 90 to 60 mole percent 1,4-cyclohexanedimethanol and 10 to 40 mole percent ethylene glycol or tetramethylene glycol, and

B. 10 to 50 weight percent, based on the weight of the polyetherester, of a poly(alkylene oxide) glycol having 2 to 4 carbon atoms in the repeating unit and having a molecular weight in the range of 400 to 2000;

d. a polyetherester comprised of

1. a dicarboxylic acid component comprised of

A. 100 to 98 mole percent 1,4-cyclohexanedicarboxylic acid and

B. 0 to 2 mole percent of a trifunctional carboxylic acid of molecular weight less than 300;

2. a diol component comprised of

A. 1,4-cyclohexanedimethanol and

B. 10 to 60 weight percent, based on the weight of the polyetherester, of a poly(alkylene oxide) glycol having 2 to 4 carbon atoms and a molecular weight in the range of 400 to 2000.

4,379,802

STAMPABLE REINFORCED THERMOPLASTIC POLYESTER SHEET WITH IMPROVED SURFACE FINISH

James C. Weaver, and Robert W. Seymour, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 21, 1982, Ser. No. 370,319

Int. Cl.³ B32B *15/00, 17/00*

U.S. Cl. 428—220 **14 Claims**

1. A stampable sheet of reinforced thermoplastic material having on at least one surface of the sheet a smooth surface suitable for use as exterior automotive panels and the like, said sheet comprising:

a plurality of layers of polymeric material and a plurality of layers of fibrous reinforcing material alternating with said layers of polymeric material, all of said layers being integrally formed together and the outer layers of said sheet being of a crystallizable material selected from poly(ethylene terephthalate), copolymers of poly(ethylene terephthalate) and blends thereof, poly(1,4-cyclohexanedimethylene terephthalate), copolymers of poly(1,4-cyclohexanedimethylene terephthalate) and blends thereof having a minimum crystallization half-time upon heating of one minute or less, the minimum crystallization half-time being that as measured with respect to each individual layer of said outer layers, wherein one of said outer layers is designated as a first layer;

a second layer of surfacing mat of fine stranded glass having a weight of about 0.1 to about 0.4 oz./sq. ft., and positioned contiguously with respect to said first layer;

a third layer of polymeric material positioned contiguously with the side of said second or surfacing layer opposite from said first layer and selected from

a. poly(ethylene terephthalate);

b. copolymers of poly(ethylene terephthalate) and blends thereof;

c. poly(1,4-cyclohexanedimethylene terephthalate);

d. copolymers of poly(1,4-cyclohexanedimethylene terephthalate) and blends thereof;

e. a polyetherester comprised of

1. a dicarboxylic acid component comprised of

A. 100 to 60 mole percent terephthalic acid, and

B. 0 to 40 mole percent of an aliphatic or aromatic dicarboxylic acid having a molecular weight of less than 300, and

2. a diol component comprised of

A. a glycol comprised of 100 to 60 mole percent tetramethylene glycol and 0 to 40 mole percent of an aliphatic or aromatic glycol having a molecular weight of less than 300, and

B. 10 to 60 weight percent, based on the weight of the polyetherester, of a poly(alkylene oxide) glycol having 2, 3 or 4 carbon atoms in the repeating unit and having a molecular weight in the range of 400 to 5000,

wherein the sum of the total mole percent amount of aliphatic or aromatic dicarboxylic acid having a molecular weight of less than 300 in item e.1.B, the mole percent amount of aliphatic or aromatic glycol having a molecular weight of less than 300 in item e.2.A., and the weight percent, based on the weight of the polyetherester, of the poly(alkylene oxide) glycol in item e.2.B. equals at least 25 but does not exceed 80;

f. a polyetherester comprised of

1. a dicarboxylic acid component comprised of

A. 100 to 98 mole percent terephthalic acid, and

B. 0 to 2 mole percent of a trifunctional carboxylic acid of molecular weight less than 300;

2. a diol component comprised of

A. a glycol comprised of 90 to 60 mole percent 1,4-cyclohexanedimethanol and 10 to 40 mole percent ethylene glycol or tetramethylene glycol, and

B. 10 to 50 weight percent, based on the weight of the polyetherester, of a poly(alkylene oxide) glycol having 2 to 4 carbon atoms in the repeating unit and having a molecular weight in the range of 400 to 2000;

g. a polyetherester comprised of

1. a dicarboxylic acid component comprised of

A. 100 to 98 mole percent 1,4-cyclohexanedicarboxylic acid and

B. 0 to 2 mole percent of a trifunctional carboxylic acid of molecular weight less than 300;

2. a diol component comprised of

A. 1,4-cyclohexanedimethanol and

B. 10 to 60 weight percent, based on the weight of the polyetherester, of a poly(alkylene oxide) glycol having 2 to 4 carbon atoms and a molecular weight in the range of 400 to 2000,

said items (a) through (g) having a minimum crystallization half-time of one minute or less, the minimum crystallization half-time being that as measured with respect to each individual layer;

said first and third layers each having about 5 to about 50

weight percent fillers selected from chopped strands of fiber glass of lengths less than about 1.4 inch, milled glass, glass spheres, novacite, talc, mica, calcium carbonate, barium sulfate and kaolin;

a fourth layer comprising one of said layers of fibrous reinforcing material being positioned contiguously with the side of third layer opposite from said second layer; and

a fifth layer of polymeric material positioned contiguously with the side of said fourth layer opposite from said third layer and being selected from

h. copolymers of poly(1,4-cyclohexylenedimethylene 1,4-cyclohexanedicarboxylate) with about 10 to about 30 mole percent dimer acid;

i. a polyetherester comprised of

1. a dicarboxylic acid component comprised of

A. 100 to 60 mole percent terephthalic acid, and

B. 0 to 40 mole percent of an aliphatic or aromatic dicarboxylic acid having a molecular weight of less than 300, and

2. a diol component comprised of

A. a glycol comprised of 100 to 60 mole percent tetramethylene glycol and 0 to 40 mole percent of an aliphatic or aromatic glycol having a molecular weight of less than 300, and

B. 10 to 60 weight percent, based on the weight of the polyetherester, of a poly(alkylene oxide) glycol having 2, 3 or 4 carbon atoms in the repeating unit and having a molecular weight in the range of 400 to 5000,

wherein the sum of the total mole percent amount of aliphatic or aromatic dicarboxylic acid having a molecular weight of less than 300 in item i.1.B., the mole percent amount of aliphatic or aromatic glycol having a molecular weight of less than 300 in item i.2.A., and the weight percent, based on the weight of the polyetherester, of the poly(alkylene oxide) glycol in item i.2.B equals at least 25 but does not exceed 80;

j. a polyetherester comprised of

1. a dicarboxylic acid component comprised of

A. 100 to 98 mole percent terephthalic acid, and

B. 0 to 2 mole percent of a trifunctional carboxylic acid of molecular weight less than 300;

2. a diol component comprised of

A. a glycol comprised of 90 to 60 mole percent 1,4-cyclohexanedimethanol and 10 to 40 mole percent ethylene glycol or tetramethylene glycol, and

B. 10 to 50 weight percent, based on the weight of the polyetherester, of a poly(alkylene oxide) glycol having 2 to 4 carbon atoms in the repeating unit and having a molecular weight in the range of 400 to 2000;

k. a polyetherester comprised of

1. a dicarboxylic acid component comprised of

A. 100 to 98 mole percent 1,4-cyclohexanedicarboxylic acid and

B. 0 to 2 mole percent of a trifunctional carboxylic acid of molecular weight less than 300;

2. a diol component comprised of

A. 1,4-cyclohexanedimethanol and

B. 10 to 60 weight percent, based on the weight of the polyetherester, of a poly(alkylene oxide) glycol having 2 to 4 carbon atoms and a molecular weight in the range of 400 to 2000,

said items (h) through (k) having a shrinkage of less than 2% as determined in accordance with ASTM Method D-955, and a minimum crystallization half-time of one minute or less.

4,379,803

MAGNETIC RECORDING MEDIUM

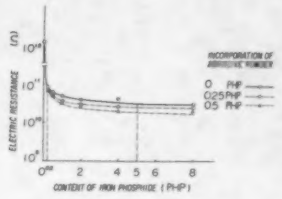
Kiminori Tamai, and Masashi Hayama, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1981, Ser. No. 306,664

Claims priority, application Japan, Oct. 7, 1980, 55/140192

Int. Cl.³ G11B *5/70*

U.S. Cl. 428—328 **6 Claims**



1. A magnetic recording medium, comprising:

a substrate coated with a magnetic layer, said magnetic layer comprising a synthetic binder, a magnetic powder and at least one Group VIII metal phosphide with the amount of said metal phosphide in said magnetic layer ranging from 0.2 to 5.0 wt. % based on said magnetic powder.

4,379,804

LIQUID SORBENT MATERIALS

John F. Eisele, Lake Elmo, and Elizabeth A. Mercer, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 28,347, Apr. 9, 1979, Pat. No. 4,225,652. This application Sep. 17, 1980, Ser. No. 188,048

The portion of the term of this patent subsequent to Sep. 30, 1997, has been disclaimed.

Int. Cl.³ B32B *23/08, 27/08, 27/10, 27/36*

U.S. Cl. 428—332 **16 Claims**

1. A composite medium for sorbing liquids comprising, in combination, a liquid-sorbent underlayer and, overlying said underlayer, a liquid-permeable surface layer capable of retaining its integrity in contact with said liquid and liquid applying means, the liquid sorptivity of said underlayer being greater than the liquid sorptivity of said surface layer whereby the composite medium has a sorption time less than the sorption time of said surface layer.

4,379,805

GRAPHICS-BEARING ELEMENT AND FLUID LINE MARKING TAPE

Gerald T. Downing, Port Washington, and Michael D. Savagian, Milwaukee, both of Wis., assignors to W. H. Brady Co., Milwaukee, Wis.

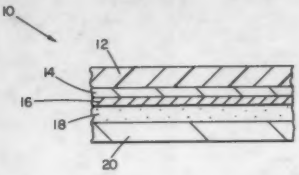
Filed Mar. 16, 1981, Ser. No. 243,788

Int. Cl.³ C09J *7/02;* **B32B** *3/14*

U.S. Cl. 428—346 **10 Claims**

1. A graphics-bearing marking element comprising an ink

graphics layer comprising a polyvinyl formal resin present in



an amount by weight in the range of 21% to 71% and having an exposed portion and providing marking indicia.

4,379,806

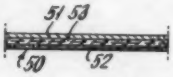
PRESSURE-SENSITIVE ADHESIVE TAPE AND PROCESS

Ralf Korpman, Somerset County, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 54,539, Jul. 5, 1979, abandoned. This application Mar. 1, 1982, Ser. No. 353,676

Int. Cl.³ C09J *7/02*; B28B *3/20*

U.S. Cl. 428—354 **9 Claims**



1. A pressure-sensitive adhesive tape comprising

(a) an adhesive layer of a normally tacky thermoplastic pressure-sensitive rubber-resin and

(b) a backing layer of a normally non-tacky thermoplastic film,

wherein said adhesive layer is joined substantially coextensively to said backing layer through an intermediate interlocking layer containing both components in a laminar relationship formed by coextruding an adhesive composition and a thermoplastic film-forming composition, each having a torque value of between about 100 meter grams and 1000 meter grams when worked at 75 r.p.m. at 420° F. in a Brabender torque dynamometer,

wherein said adhesive composition comprises (i) an elastomeric component and (ii) a tackifier resin component in which the tackifier resin component is present in an amount of from about 20 to 300 parts for each 100 parts by weight of the elastomeric component, and

wherein the elastomeric component of the adhesive composition comprises a block copolymer selected from the group consisting of A—B—A block copolymer, A—B block copolymer and mixtures thereof.

4,379,807

MAGNET WIRE FOR HERMETIC MOTORS

Harold R. Otis, and Charles E. Blake, both of Fort Wayne, Ind., assignors to Rea Magnet Wire Co., Inc., Fort Wayne, Ind.

Filed Mar. 13, 1981, Ser. No. 243,587

Int. Cl.³ B32B *27/00*

U.S. Cl. 428—383 **7 Claims**

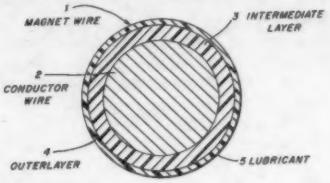
1. A magnet wire suitable for use in an hermetic motor environment comprising

a conductor wire;

an insulating intermediate layer adjacent and exterior to said conductor wire;

a polyamide outer layer adjacent and exterior to said intermediate layer, said polyamide being selected from the group consisting of polyundecaneamide, polydodecaneamide, and mixtures and copolymers thereof; and

an organic polymeric lubricant adjacent and exterior to said outer layer, said lubricant comprising a saturated C_2–C_4 ether of ethylene oxide and 1,2-propylene oxide copolymers, the ratio of ethylene oxide to propylene oxide being



about 1:1 to 3:1; said lubricant having a pour point below about 15° F., a viscosity at 100° F. of about 100 to 400 SUS, and a molecular weight of about 200 to 800; said lubricant wetting the outer layer, and being soluble in monochlorodifluoromethane and dichlorodifluoromethane.

4,379,808

SHEET TYPE FORMING BOARD AND FORMED BOARD PRODUCTS

John N. Cole, Maineville, and David A. Hettel, Cincinnati, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Jun. 30, 1980, Ser. No. 164,454

Int. Cl.³ B32B *23/00, 29/02*

U.S. Cl. 428—438 **12 Claims**

1. A forming board sheet for use in a heat forming process, comprising at least a first layer consisting essentially of (a) cellulose fibers, (b) a solid particulate polyolefin, and (c) an inorganic filler and having a moisture content of between approximately 4–12% by weight, whereby said forming board is easily formable in a conventional hot press without the requirement of pre-soaking and/or pre-steaming.

4,379,809

MAGNETIC RECORDING MEDIUM

Akihiro Matsufuji; Tadashi Ishiguro, and Nobuo Tsuji, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 30, 1981, Ser. No. 307,691

Claims priority, application Japan, Sep. 30, 1980, 55-136133

Int. Cl.³ B32B *9/00*

U.S. Cl. 428—470 **6 Claims**

1. A magnetic recording medium which comprises a non-magnetic support having thereon a magnetic recording layer comprising ferromagnetic particles dispersed in a binder, with the surface of said ferromagnetic particles being treated with an aluminum alcoholate of the formula (I):

$$Al(OR)_3 \quad (I)$$

wherein each R, which may be the same or different, represents a straight or branched chain alkyl group having 1 to 10 carbon atoms.

4,379,810

WATER SOLUBLE PENTACHLOROPHENOL AND TETRACHLOROPHENOL WOOD TREATING SYSTEMS CONTAINING FATTY ACID AMINE OXIDES

Joseph Amundsen, Federal Way; Robert J. Goodwin, Puyallup, and William H. Wetzel, Federal Way, all of Wash., assignors to Reichhold Chemicals, Incorporated, White Plains, N.Y.

Division of Ser. No. 297,162, Aug. 28, 1981, Pat. No. 4,357,163, which is a continuation-in-part of Ser. No. 176,795, Aug. 11, 1980, Pat. No. 4,288,249, which is a continuation of Ser. No. 14,955, Feb. 26, 1979, abandoned, which is a continuation of Ser. No. 875,035, Dec. 2, 1977, abandoned. This application Aug. 18, 1982, Ser. No. 409,151

Int. Cl.³ B05D 1/18; B27K 3/00; C09D 5/16

U.S. Cl. 428—541 16 Claims

1. A treated and preserved wooden object having a deposit within the wood fibers of an essentially non-leachable chlorophenol formed therein by

I. forming a wood treating and preserving solution by blending (A) from about 0.1% to about 50% by weight of a chlorophenol selected from a group consisting of pentachlorophenol and tetrachlorophenol and mixtures thereof, (B) from about 1% to about 97% by weight of an aliphatic alcohol having from one to six carbon atoms and mixtures thereof, (C) from about 0.2% to about 35% by weight of a fatty acid amine oxide having from about 10 to about 32 carbon atoms, (D) from about 1% to about 97% by weight water, and (E) from about 0.2% to about 35% by weight of an amine selected from the group consisting of ammonium hydroxide, triethylamine, trimethylamine, methyl amine and methyldiethanol amine and mixtures thereof;

II. impregnating under heat and pressure the wooden object;

III. separating said wooden object from said solution; and

IV. drying said treated wooden object.

4,379,811

TUBULAR FILLER WIRE FOR FUSION WELDING

Manfred Puschner, Solingen, and Herbert Gerdau, Haan, both of Fed. Rep. of Germany, assignors to ESAB Aktiebolag, Sweden

Filed Apr. 27, 1978, Ser. No. 900,578

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1977, 2719357

Int. Cl.³ B23K 35/02, 35/04

U.S. Cl. 428—555 6 Claims

1. A composite filler rod or filler wire for fusion welding comprising a core of particulate material, a tubular metal sheath formed about said core from a strip of said metal so as to include a seam therein, and a seamless metal tube enclosing and firmly engaging said tubular sheath.

4,379,812

STRESS RELIEVED METAL/CERAMIC ABRADABLE SEALS AND DEFORMABLE METAL SUBSTRATE THEREFOR

Raymond V. Sara, North Olmstead, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 973,553, Dec. 27, 1978, Pat. No. 4,243,169. This application Jul. 24, 1980, Ser. No. 171,830

Int. Cl.³ B21H 3/00; F03B 11/00; F04D 29/08

U.S. Cl. 428—577 3 Claims

1. A deformable metal substrate plate adapted for bonding to a multi-layer metal/ceramic abradable composite which comprises a metal plate curved in one plane to a predetermined radius such that the thermal stresses of bonding said metal/ceramic composite to said substrate plate will cause said substrate plate to assume a desired radius after said bonding, said substrate plate having at least two integral axial ribs.

4,379,813

PROPELLERS AND WINDMILLS

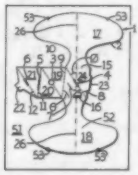
John H. Newnham, 20 Village Ave., Doncaster, 3108 Victoria, Australia

Filed Jun. 3, 1980, Ser. No. 155,936

Claims priority, application Australia, Jun. 6, 1979, PD 9079

Int. Cl.³ B64C 11/20

U.S. Cl. 428—587 22 Claims



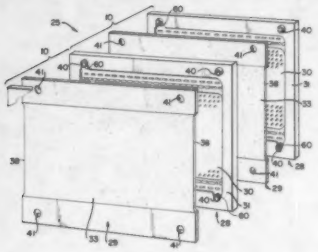
1. A propeller or windmill blank comprising a planar sheet of material having markings defining a central region and two blades extending in opposite directions along imaginary lines; and wherein the blank has a marking or a line of preferential folding or bending inclined to the imaginary lines which, when the blank is folded or bent therealong, will result in pitch being applied to the blades; a portion having a marking or line of preferential folding or bending on each side of which marking or line the portion is of generally triangular shape, and means for stabilizing a fold or bend on the first said marking or line which will result in pitch being applied, a fold or bend on the second said marking or line and for securing said portion to said central region such that said portion and said central region when so secured together define a hub region of generally tetrahedral shape from edges of which said blades project.

11. A propeller or windmill formed from a blank comprising a planar sheet of material having markings defining a central region and two blades extending in opposite directions along imaginary lines; and wherein the blank has a marking or line of preferential folding or bending inclined to the imaginary lines which, when the blank is folded or bent therealong, will result in pitch being applied to the blades; a portion having a marking or line of preferential folding or bending on each side of which marking line the portion is of generally triangular shape, and means for stabilizing a fold or bend on the first said marking or line.

4,379,814
SHEET ELECTRODE FOR ELECTROCHEMICAL SYSTEMS

Hsue C. Tsien, Chatham Township, Morris County; Kenneth R. Newby, Berkeley Heights; Patrick G. Grimes, and Richard J. Bellows, both of Westfield, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 1, 1981, Ser. No. 268,674
Int. Cl.³ H01M *4/96*
U.S. Cl. 429—42 **25 Claims**



1. An extruded sheet electrode for use in an electrochemical cell comprising a sheet composite of coextruded electrically conductive and non-conductive plastic materials, said conductive plastic material comprising a mid-portion of said sheet, and said non-conductive plastic material comprising coextruded side portions of said sheet.

4,379,815
CELL HAVING MIXED SOLID CATHODE MATERIALS FOR CONTROLLING CELL EXPANSION ON DISCHARGE

Gerald F. Bubnick, Avon Lake, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1981, Ser. No. 278,903
Int. Cl.³ H01M *4/52, 4/58*
U.S. Cl. 429—66 **7 Claims**

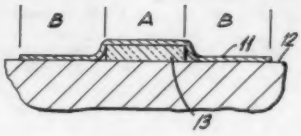
1. A cell comprising a consumable anode, a cathode that expands during cell discharge, and an electrolyte, the improvement wherein the cathode comprises a physical mixture of at least two solid active cathode materials in which a first solid active cathode material volumetrically expands more than the volumetric contraction of the anode during cell discharge and a second solid cathode material that volumetrically expands less than the volumetric expansion of the first solid active cathode material during cell discharge and wherein said solid active cathode materials are selected such that the volumetric expansion of the mixture of the solid active cathode materials is substantially equal to the volumetric contraction of the anode during cell discharge thereby providing a substantially constant volume for the cathode/anode assembly during discharge of the cell.

4,379,816
INDICATOR OF FULL CHARGE FOR SECONDARY CELL OR BATTERY THEREOF

Ferdinand H. Mullersman, Gainesville, Fla., and Charles R. Blake, North Redondo Beach, Calif., assignors to General Electric Company, Gainesville, Fla.

Continuation of Ser. No. 189,337, Sep. 22, 1980. This application Oct. 20, 1981, Ser. No. 313,312
Int. Cl.³ H01M *10/48*
U.S. Cl. 429—91 **6 Claims**

1. A full charge indicator for secondary sealed cells and the like, or battery thereof, for indicating attainment of full charge during a charging operation, comprising heat sensitive means adapted to display a change in some perceivable characteristic when subjected to heat, a first element of said heat sensitive means being thermally coupled to the battery or cell so that said element is maintained at substantially the same temperature as the battery or cell, and a second element of said heat sensitive means being thermally isolated from the battery or cell so that it remains substantially at ambient temperature, such that once the battery or cell has reached essentially full



charge, further charging causes said first element to undergo a change in said perceivable characteristic as a result of the change in temperature of the battery or cell, while the second element substantially does not undergo a change in said characterisitic, the relative difference in the perceivable characteristic of the two elements being observable.

4,379,817
ORGANIC SOLVENT-TREATED MANGANESE DIOXIDE-CONTAINING CATHODES

Akiya Kozawa, Middleburg Heights, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

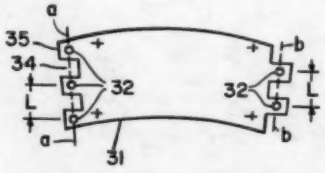
Continuation of Ser. No. 135,776, Mar. 31, 1980, abandoned. This application Dec. 29, 1981, Ser. No. 335,441
Int. Cl.³ H01M *4/02*
U.S. Cl. 429—224 **8 Claims**

1. A manganese dioxide for use as a cathode of a non-aqueous cell wherein at least the walls of the pores of the manganese dioxide exposed on the cathode surface are substantially coated with a vapor deposited organic solvent so as to reduce the affinity of the manganese dioxide for absorbing moisture.

4,379,818
ARTWORK ALIGNMENT FOR DECORATING MACHINE

William E. Lock, Horseheads, and Edward A. Snyder, Lindley, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,725
Int. Cl.³ G03F *9/00*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 430—5 **5 Claims**



1. In a process for engraving the surface of a conical roll with registerable color separated etched portions of a design by photographic activation of surface portions of said roll through a photomask, a method for producing said photomask comprising the steps of: exposing a photomask forming film to the color separated portion of the design to produce an image on the photomask having relatively negative and positive regions therein corresponding to said color separated portion of the design; graphically representing a planar development of the conical roll to be engraved into an outline having axial and lateral margins; superimposing the image on the film and de-

velopment outline into a selected planar orientation to produce a composite film; shearing the composite film at least along the lateral margins of the development outline; fabricating a fixture for aligning the axial margins of the outline; the fixture formed of a surface support member having a shape corresponding to that of the conical roll along at least one of the lateral margins of the development outline; forming at least one aperture in the surface support member of the fixture at a selected location and forming a removable pin securable in said aperture; forming at least one aperture in the film in a position corresponding to the selected location of the apertures in the fixture; wrapping the film over the fixture; aligning at least the axial margins of the film while wrapped on said fixture; aligning the respective apertures in the film and fixture one over the other; inserting the pin through the aligned aperture to secure the film and fixture in alignment; and securing the lateral margins together in butting relation to form a conical shell corresponding to and removably sleevable over the conical surface to be etched so as to produce a photomask therefor.

4,379,819

COLOR-PHOTOGRAPHIC RECORDING MATERIAL FOR THE SILVER DYE BLEACH PROCESS

John Lenoir; Gerald Jan, both of Fribourg, and Mario Fryberg, Praroman-le-Mouret, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

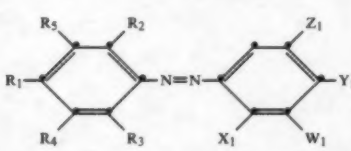
Filed Apr. 28, 1981, Ser. No. 258,263

Claims priority, application Switzerland, Apr. 30, 1980, 3342/80

Int. Cl.³ G03C *1/10*

U.S. Cl. 430—17 **17 Claims**

1. A colour-photographic recording material for the silver dye bleach process which contains at least one diffusion-resistant, bleachable and oil-soluble monoazo dye dissolved in a high-boiling organic solvent in at least one silver halide emulsion layer or in a colloid layer adjoining the silver halide emulsion layer, and wherein the dye has the formula



(1)

in which R_1 is hydrogen, substituted or unsubstituted alkyl having 1 to 18 carbon atoms, substituted or unsubstituted alkoxy having 1 to 16 carbon atoms, substituted or unsubstituted alkenyl having 2 to 4 carbon atoms, substituted or unsubstituted aliphatic acyl having 2 to 5 carbon atoms, substituted or unsubstituted benzoyl, substituted or unsubstituted carbalkoxy having 2 to 20 carbon atoms or $—NV_1COU_1$, in which V_1 is hydrogen or alkyl having 1 to 4 carbon atoms and U_1 is substituted or unsubstituted alkyl having 1 to 12 carbon atoms or substituted or unsubstituted alkenyl having 2 to 4 carbon atoms, or R_1 is N-alkyl-substituted or N,N-dialkyl-substituted carboxamido or sulfonamido, in which each alkyl moiety has 1 to 12 carbon atoms and can be substituted further, or R_1 is substituted or unsubstituted alkylsulfone having 1 to 12 carbon atoms, substituted or unsubstituted arylsulfone, substituted or unsubstituted aryloxy or substituted or unsubstituted arylsulfonic acid ester, or is hydroxyl, cyano, nitro or halogen, R_2 is hydrogen, substituted or unsubstituted alkyl having 1 to 12 carbon atoms, substituted or unsubstituted alkoxy having 1 to 6 carbon atoms, substituted or unsubstituted carbalkoxy having 2 to 5 carbon atoms or N-alkyl-substituted or N,N-dialkyl-substituted sulfonamido or carboxamido, in which each alkyl moiety has 1 to 8 carbon atoms and can be substituted, or R_2 is substituted or unsubstituted alkylsulfone having 1 to 6 carbon atoms, substituted or unsubstituted arylsulfone or substituted or unsubstituted aryloxy, or is cyano, nitro or halogen, R_3 is hydrogen, substituted or unsubstituted alkyl or alkoxy having 1 to 4 carbon atoms, substituted or unsubstituted phenoxy, or N-alkyl-substituted or N,N-dialkyl-substituted sulfonamido or carboxamido, in which each alkyl moiety has 1 to 6 carbon atoms and can be substituted, or R_3 is substituted or unsubstituted alkylsulfone having 1 to 4 carbon atoms, substituted or unsubstituted phenylsulfonic acid ester, cyano, nitro, halogen, substituted or unsubstituted carbalkoxy having 1 to 16 carbon atoms, or $—P(O)(OT^1)_2$, in which T^1 is alkyl having 1 to 4 carbon atoms, R_4 is hydrogen, substituted or unsubstituted alkyl having 1 to 4 carbon atoms, substituted or unsubstituted alkoxy having 1 to 6 carbon atoms, substituted or unsubstituted carbalkoxy having 2 to 16 carbon atoms or N-alkyl-substituted or N,N-dialkyl-substituted sulfonamido or carboxamido, in which each alkyl moiety has 1 to 12 carbon atoms and can be substituted, or R_4 is $—NQ_1COT_1$, in which Q_1 is hydrogen or alkyl having 1 or 2 carbon atoms and T_1 is substituted or unsubstituted alkyl having 1 to 4 carbon atoms, or R_4 is substituted or unsubstituted alkylsulfone having 1 to 12 carbon atoms, substituted or unsubstituted arylsulfone hydroxyl, cyano, nitro or halogen, R_5 is hydrogen, substituted or unsubstituted alkyl having 1 to 4 carbon atoms or substituted or unsubstituted carbalkoxy having 2 to 13 carbon atoms, X_1 is hydrogen, substituted or unsubstituted alkyl or alkoxy having 1 to 6 carbon atoms or $—NL_1CO—M_1$, in which L_1 is hydrogen or substituted or unsubstituted alkyl having 1 to 4 carbon atoms and M_1 is substituted or unsubstituted alkyl or alkoxy having 1 to 24 carbon atoms, or X_1 is substituted or unsubstituted alkylsulfonylamino having 1 to 25 carbon atoms or hydroxyl, Y_1 is hydrogen, substituted or unsubstituted alkyl having 1 to 6 carbon atoms, substituted or unsubstituted alkoxy having 1 to 12 carbon atoms, substituted or unsubstituted carbalkoxy having 2 to 5 carbon atoms or N-alkyl-substituted or N,N-dialkyl-substituted amino, in which each alkyl moiety has 1 to 6 carbon atoms and can be substituted, or Y_1 is substituted or unsubstituted arylsulfonylamino or $—NE_1COG_1$, in which E_1 is hydrogen or substituted or unsubstituted alkyl having 1 to 8 carbon atoms and G_1 is substituted or unsubstituted alkyl having 1 to 12 carbon atoms or substituted or unsubstituted alkoxy having 1 to 4 carbon atoms, or Y_1 is $—NE_1P(O)(OG^1)_2$, in which E_1 is as defined above and G^1 is alkyl having 1 to 12 carbon atoms, or Y_1 is halogen or hydroxyl, Z_1 is hydrogen, substituted or unsubstituted alkyl having 1 to 12 carbon atoms, substituted or unsubstituted alkoxy having 1 to 6 carbon atoms or $—NA_1COD_1$, in which A_1 is hydrogen or substituted or unsubstituted alkyl having 1 to 8 carbon atoms and D_1 is substituted or unsubstituted alkyl having 1 to 18 carbon atoms, or Z_1 is substituted or unsubstituted acyl having 2 to 9 carbon atoms, substituted or unsubstituted carbalkoxy having 2 to 19 carbon atoms, substituted or unsubstituted alkylsulfonylamino having 1 to 6 carbon atoms, halogen or the atoms which together with Y_1 form a substituted or unsubstituted 5-membered or 6-membered, saturated or unsaturated ring which can contain 1 or 2 hetero-atoms, and W_1 is hydrogen, substituted or unsubstituted alkyl or alkoxy, each having 1 to 4 carbon atoms, or halogen.

4,379,820

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR OF HALOGEN-DOPED SE-TE ALLOY LAYERS

Hitoshi Nakamura; Hideyo Nishizima; Hideaki Ema; Makoto Harigaya, and Satoshi Otomura, all of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 17, 1981, Ser. No. 255,168

Claims priority, application Japan, Apr. 22, 1980, 55-52381

Int. Cl.³ G03G *5/082*

U.S. Cl. 430—58 **4 Claims**

1. A layered electrophotographic photoconductor comprising:

an electrically conductive base;

a charge transporting layer, with a thickness ranging from 45 μm to 55 μm, formed on said electrically conductive base, which charge transporting layer comprises a selenium-tellurium alloy, the concentration of tellurium ranging from 1 to 10 weight percent of the total of the selenium-tel-

lurium, doped with halogen with a concentration equal to 10 to 500 ppm of the total of selenium and tellurium; and a charge generating layer, with a thickness ranging from 3 to 10 μm, formed on said charge transporting layer, which charge generating layer comprises a selenium-tellurium-arsenic alloy, doped with halogen, the concentration of tellurium ranging from 6 to 10 weight percent of the total of selenium and tellurium, the concentration of arsenic ranging 0.5 to 10 weight percent with respect to the total of selenium and tellurium, and the concentration of halogen ranging from 10 ppm to 500 ppm with respect to the total of selenium and tellurium.

4,379,821

ELECTROPHOTOGRAPHIC RECORDING MATERIAL WITH $AS_2SE_{3-x}TE_x$ CHARGE GENERATING LAYER

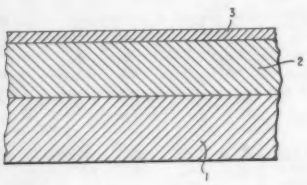
Manfred Lutz, and Bernd Reimer, both of Warstein, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 269,941

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1980, 3020939

Int. Cl.³ G03G 5/04

U.S. Cl. 430—58 8 Claims



1. In an electrophotographic recording material including a dual photoconductive layer containing selenium applied to an electrically conductive substrate, the improvement wherein the recording material contains only the substrate and the dual photoconductive layer, and the dual photoconductive layer consists of a layer of amorphous arsenic selenide as a charge transporting layer disposed on said substrate, and a layer of a compound of arsenic, selenium, and tellurium of the formula $As_2Se_{3-x}Te_x$, where $0<x<3$, as a charge generating layer, superposed on said layer of arsenic selenide.

4,379,822

CONDUCTIVE BARRIER COAT FOR ELECTROSTATIC MASTERS

Michael J. Shaw, Paw Paw, Mich., assignor to Allied Paper, Incorporated, Kalamazoo, Mich.

Filed Feb. 18, 1981, Ser. No. 235,602

Int. Cl.³ G03G 5/14, 5/04

U.S. Cl. 430—62 8 Claims

1. A printing master comprising

(a) a base;

(b) a water resistant barrier coat applied to said base;

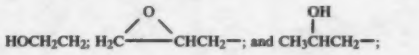
(c) a photoconductive layer comprising a photoconductive material and a binder applied to said barrier coat;

(d) said barrier coat comprising on a dry weight basis, in a film-forming amount, about 50–95% of an organic hydrophobic and thermoplastic film-forming resin having labile hydrogen-containing functional groups, and about 5–15% of a conductive agent; said coat having a resistivity less than about 10^{11} ohms per square in said barrier coat, said resin being applied to the base as either a latex or colloidal dispersion;

(e) said conductive agent being a quaternary ammonium salt having the formula;

where

R^I is a radical selected from the group consisting of



R^{II} is lower alkyl having from one to three carbon atoms;

A is 1, 2, or 3; and

X is an anion selected from the group consisting of chloride, fluoride, bromide, sulfate, phosphate or acetate;

said barrier coat being substantially free of materials which adversely affect water resistance.

4,379,823

COMPOSITION FOR FORMING PHOTOCONDUCTIVE COATING CONTAINING A PHOTOCONDUCTIVE DONOR AND AN ACCEPTOR-SENSITIZER

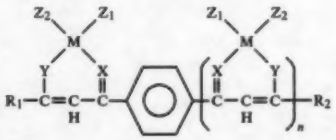
James M. Halm, Lombard, Ill., assignor to A. B. Dick Company, Niles, Ill.

Continuation-in-part of Ser. No. 131,150, Mar. 17, 1980, abandoned, which is a continuation of Ser. No. 897,719, Apr. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 738,147, Oct. 29, 1976, abandoned. This application May 27, 1980, Ser. No. 153,881

Int. Cl.³ G03G 5/09, 5/04

U.S. Cl. 430—83 23 Claims

1. A composition for the preparation of photoconductive layers comprising the combination of an organic photoconductive donor and an acceptor-sensitizer compound having the general formula



in which M is a metal or metalloid selected from the group consisting of aluminum, gallium, indium, thalium and boron, X and Y are groups selected from the group consisting of sulphur, nitrogen, phosphorus, antimony, selenium and oxygen, Z_1 and Z_2 are selected from the group consisting of a halogen and substituted and unsubstituted alkyl, alkaryl and heterocyclic groups selected from the groups consisting of furyl, pyrryl, idoyl, pyrimidyl, pyridyl and furfuryl, R_1 and R_2 are groups selected from the group consisting of substituted and unsubstituted aryl, alkaryl, alkyl and alicyclic groups, n is a number of 1 or 2, in which the composition used to form the layer contains the component in an amount within the range of 1–10% by weight, when in solution and 2–25% by weight, when in suspension.

4,379,824

DEVELOPER COMPOSITIONS HAVING LAYER OF A PIGMENT ON THE SURFACE THEREOF

Stanley B. Collins, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 17, 1981, Ser. No. 255,294

Int. Cl.³ G03G 9/14, 13/09

U.S. Cl. 430—106.6 16 Claims

1. A dry composition capable of being attracted to electrostatic image areas on a dielectric surface, said composition having a static electrical conductivity of at least 10^{-6} ohm^{-1}

^{1}centimeter^{-1} wherein said composition comprises a plurality of discrete spheroids each having an essentially smooth surface and each comprising a thermoplastic organic resin with a magnetically responsive material distributed therein, and from about 1 to 12 μg per square centimeter of surface area of said spheroids of a coating of a first pigment on said smooth surface wherein said first pigment comprises particles each having an arithmetic mean particle size of at least 0.02 micron, a dibutyl phthalate absorption value of at least 150 cubic centimeters per 100 grams of said pigment, and a static electrical conductivity of at least 10^{-8} ohm^{-1}centimeter^{-1}.

4,379,825

POROUS ELECTROPHOTOGRAPHIC TONER AND PREPARATION PROCESS OF MAKING

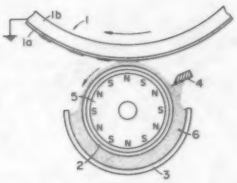
Yasuo Mitushashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1981, Ser. No. 233,288

Claims priority, application Japan, Feb. 14, 1980, 55-16998; Dec. 23, 1980, 55-183134; Dec. 23, 1980, 55-183135

Int. Cl.^{3} G03G *9/16*

U.S. Cl. 430—111 **12 Claims**



1. Porous toner which comprises a coloring matter and a binder, said toner being formed by obtaining a powder through a step of mixing and kneading under heat a toner preparing material including a coloring matter, a binder and an elimination compound having a particle size from 0.01–20 microns which neither softens nor melts at a temperature at which said binder softens or melts, and by treating said powder with a solvent to remove said elimination compound to thereby form irregular shaped particles having voids or pores from 0.01 to 20 microns in diameter in the surface and interior thereof.

11. A process for preparing a porous toner which comprises mixing and kneading under heat a toner preparing material including a coloring matter, a binder and an elimination compound which neither softens nor melts at a temperature at which said binder softens or melts, then finely dividing the mixture to form powder, and thereafter applying heat treatment to the powder, followed by treating the powder with a solvent to remove said elimination compound.

4,379,826

POSITIVE ELECTRON BEAM RESISTS OF ORTHO CHLORO SUBSTITUTED PHENOL OR CRESOL CONDENSED WITH FORMALDEHYDE

James Economy; Roy J. Gritter, both of San Jose, and Hiroyuki Hiraoka, Saratoga, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1981, Ser. No. 298,138

Int. Cl.^{3} G03C *1/58, 5/22, 5/34, 5/00*

U.S. Cl. 430—141 **3 Claims**

1. In a process for forming a positive electron beam resist by the steps of imagewise exposing a resin sensitized by a naphthoquinone diazide to electron beam irradiation, and selectively removing the exposed portion of the resin by treating it with a solvent, the improvement characterized in that the resin is a condensation product of formaldehyde with a phenol or a cresol having a chloro substituent ortho to the hydroxyl group on its aromatic ring.

4,379,827

IMAGING STRUCTURE WITH TELLURIUM METAL FILM AND ENERGY SENSITIVE MATERIAL THEREON

Robert W. Hallman, Orchard Lake, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 205,860, Dec. 8, 1971, abandoned. This application Apr. 12, 1973, Ser. No. 350,372

The portion of the term of this patent subsequent to Sep. 12, 1996, has been disclaimed.

Int. Cl.^{3} G03C *1/54, 1/72, 1/94*

U.S. Cl. 430—166 **3 Claims**

1. A structure for producing images comprising a substrate, a thin film of a metallic or metallic-like image forming material comprising tellurium or a tellurium containing composition on a surface of the substrate, said image forming material being characterized in that it is opaque and is easily soluble in a solvent consisting essentially of a dilute aqueous solution of an alkali metal hypochlorite, and a thin film of an energy sensitive material on the film of image forming material, said energy sensitive material being characterized in that it is capable upon the application of energy of changing between two states, one of which is a state in which the energy sensitive material is substantially soluble or permeable with respect to the aforementioned solvent in which the image forming material is easily soluble and the other being a state in which the energy sensitive material is substantially insoluble or impermeable with respect to said solvent, the film of energy sensitive material and the film of image forming material and the thinnesses thereof being such that the change in the state of the energy sensitive material upon the application of energy thereto and the essentially simultaneous dissolution in said solvent of both the energy sensitive material in those areas where it is in a substantially soluble or permeable state and the image forming material underlying said areas, can together, take place in substantially less than one minute to provide an imaged product.

4,379,828

IMAGE RECEPTOR ELEMENT FOR THE DYE DIFFUSION TRANSFER PROCESS

Werner Liebe; Karl Lohmer, both of Leverkusen, and Willibald Pelz, Cologne, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 14, 1981, Ser. No. 263,584

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018644

Int. Cl.^{3} G03C *7/00, 5/54, 5/48*

U.S. Cl. 430—212 **4 Claims**

1. An image receptor element for dye diffusion transfer process with diffusible dye anions comprising

a support and

at least one image receiving layer containing as a mordant for said dye anions, means for providing in the image receiving layer a dye absorption capacity which is variable normal to the plane of the layer in the direction of diffusion of the dye anions into the image receiving layer during processing from a light sensitive element which is in alkali permeable contact with the image receiving layer,

said means comprising cationic groups reactable with the diffusible dye anions and distributed in the image receiving layer so as to provide an increase in the dye absorption capacity extending through the image receiving layer normal to the plane of the layer and with increasing distance from the contact.

4,379,829

PHOTOGRAPHIC MATERIAL CONTAINING A TEMPORARY BARRIER LAYER APPLIED FROM AN ORGANIC SOLUTION

Werner Krafft, Leverkusen; Günter Helling, Cologne; Güunther Matschke, Leverkusen, and Immo Boie, Langenfeld, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 2, 1981, Ser. No. 222,087

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1980, 3000193

Int. Cl.³ G03C *1/40, 5/54, 7/00*

U.S. Cl. 430—215 5 Claims

1. In a color photographic material for a dye diffusion transfer process, which contains color providing compounds having at least one temporary barrier layer arranged between two layers which are permeable to alkali, said barrier layer consisting of a mixture of 40 to 95% by weight of a first polymer and 5 to 60% by weight of a second polymer applied from organic solution of said mixture, said first polmer being a copolymer of from 40 to 80% by weight of at least one comonomer I selected from the group consisting of vinylidene chloride, dimethyl butadiene and dichlorobutadiene; from 18 to 50% by weight of at least one comonomer II selected from the group consisting of (meth) acrylonitrile and alkyl (meth)-acrylate and from 2 to 10% by weight of at least one comonomer III selected from the group consisting of olefinically unsaturated copolymerisable mono or dicarboxylic acids, sulfonic acids and phosphonic acid, and wherein the improvement comprises the second polymer in a homopolymer selected from the group consisting of poly-(alkyl acrylate) poly-(hydroxy alkyl acrylate), polycarbonate, poly-(N-alkyl acrylamide), poly-(vinyl acetate) and cellulose acetate, or of a copolymer of from 80 to 90% by weight of alkyl acrylate or hydroxyalkyl acrylate and from 1 to 20% by weight of an olefinically unsaturated, copolymerisable mono or dicarboxylic acid, sulfonic acid or phosphonic acid, the temporary barrier layer being incorporated in a neutralization system in proximity to the reception layer of the dye diffusion materials.

4,379,830

DEVELOPER FOR POSITIVE PHOTOLITHOGRAPHIC ARTICLES

Albert S. Deutsch, Hartsdale; Christopher F. Lyons, Wappingers Falls, and Robert Piller, White Plains, all of N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Filed Oct. 6, 1981, Ser. No. 308,960

Int. Cl.³ G03C *5/30;* C11D *3/04, 7/06*

U.S. Cl. 430—309 3 Claims

1. An improved alkaline developer for photolithographic articles comprising from 0.5 to 30% wt. sodium metasilicate, wherein the improvement comprises addition of from 2 to 5% wt. of sodium chloride, based on total weight of the developer.

4,379,831

PROCESS FOR TRANSFERRING A PATTERN ONTO A SEMICONDUCTOR DISK

Ernst Löbach, Eschen, Liechtenstein, assignor to Censor Patent- und Versuchs-Anstalt, Vaduz, Liechtenstein

PCT No. PCT/EP80/00101, § 371 Date May 21, 1981, § 102(e) Date May 7, 1981, PCT Pub. No. WO81/00923, PCT Pub. Date Apr. 2, 1981

PCT Filed Sep. 19, 1980, Ser. No. 261,164

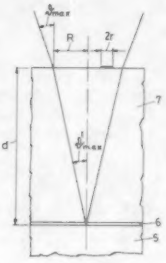
Claims priority, application European Pat. Off., Sep. 21, 1979, 79103567.8

Int. Cl.³ G03C *5/04, 5/00;* G03B *27/32, 27/52*

U.S. Cl. 430—311 6 Claims

1. In a process for photolithographically transferring a pattern from a mask onto a semiconductor wafer by covering a semiconductor substrate thereof with a photoresist layer, imaging said pattern on said photoresist layer by means of a projection objective of predetermined numerical aperture NA = sin θ_{max} where θ_{max} is half the apex angle of an elemental beam converging from said objective onto said photoresist layer, and thereafter removing exposed portions of said photoresist layer, a method of suppressing the effects of minute dust particles upon the projected image, comprising the steps of

(a) depositing on said photoresist layer a planar, solid and light-transmitting coating of refractive index n corresponding at least approximately to that of said photoresist



layer, said coating having a thickness d of at least several microns substantially exceeding that of said layer and sufficient to let an elemental beam strike the outer surface of said coating on an area substantially greater than that of a dust particle having a radius of one micron, said thickness d lying in a range in which the resulting spherical aberration given by

$$d\left(\frac{1}{n} - \frac{\cos\theta_{max}}{\sqrt{n^2 - \sin^2\theta_{max}}}\right)$$

is less than the Rayleigh depth, and

(b) removing said coating not later than with the removal of said exposed portions.

4,379,832

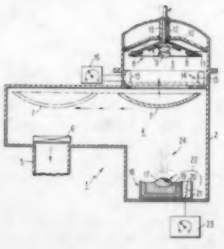
METHOD FOR MAKING LOW BARRIER SCHOTTKY DEVICES OF THE ELECTRON BEAM EVAPORATION OF REACTIVE METALS

Hormazdyar M. Dalal, and John J. Lowney, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1981, Ser. No. 297,642

Int. Cl.³ G03C *5/00;* B05D *3/06, 5/12, 1/32*

U.S. Cl. 430—315 10 Claims



1. An improved lift-off mask method for applying a reactive metal layer to a major surface of a semiconductor substrate, the method including forming a compound layer of photoresist materials at the semiconductor surface; selectively exposing the photoresist layer to radiation which the photoresist is

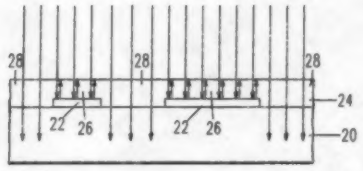
reactive to; removing portions of the photoresist layer to expose select regions of the substrate surface; depositing at least a first layer of reactive metal at the selectively exposed substrate surface and the photoresist by electron beam evaporation of the reactive metal; and removing the photoresist and reactive metal layer on the photoresist layer; the improvement comprising irradiating the photoresist layer with x-rays generated by heating a charge of reactive metal from which the metal to be deposited is supplied to a temperature below the evaporation temperature of the metal while under vacuum with an electron beam for a predetermined time before depositing the reactive metal.

4,379,833

SELF-ALIGNED PHOTORESIST PROCESS

Benjamin J. Canavello, Lillian, Ala., and Michael Hatzakis, Chappaqua, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,467
Int. Cl.³ H05K 3/06, 3/46
U.S. Cl. 430—325 8 Claims



1. A self-aligned photoresist process, comprising the steps of:

depositing a layer of photoresist over a substrate surface, said surface having a pattern of areas with substantially higher reflectivity than surrounding areas in a wavelength region in which said photoresist is sensitive;

flooding the deposited photoresist layer with light in said wavelength region, the greater reflection of light at the pattern areas of higher reflectivity causing greater exposure of the photoresist layer in regions overlying said pattern areas of higher reflectivity; and

developing the flooded photoresist layer thereby producing a resist pattern corresponding with the pattern areas of higher reflectivity and aligned therewith.

4,379,834

PROCESS FOR CLEANING COPPER-CONTAINING METAL SURFACES

Walter Herwig, Bad Soden; Kurt Klüpfel, Wiesbaden; Helga Sikora, Wiesbaden, and Heide Sprengel, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 270,052, Jun. 3, 1981, abandoned, which is a division of Ser. No. 93,114, Nov. 13, 1979, abandoned. This application Jun. 23, 1982, Ser. No. 391,084
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1978, 2849894
Int. Cl.³ G03C 5/24
U.S. Cl. 430—329 9 Claims

1. In the process for the production of a photoresist image, in which a photopolymerizable photoresist layer is applied to a support of copper or a copper alloy, is exposed imagewise and is washed out of the unexposed areas by means of an aqueous-alkaline developer solution,

the improvement which comprises treating the surface of the support, after the development as a separate cleaning step, with a solution which contains a water-soluble aliphatic sulfonic acid, or a water-soluble salt of such a sulfonic acid, having 8 to 30 carbon atoms, the photoresist stencil remaining unattacked during this cleaning step.

4,379,835

BLACK IMAGE FROM A THERMOGRAPHIC IMAGING SYSTEM

Robert D. Lowrey, Saint Paul, Minn.; Howard D. Nelson, River Falls, Wis., and George Van Dyke Tiers, Saint Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Dec. 22, 1980, Ser. No. 218,559
Int. Cl.³ G03C 1/72; B41M 5/18, 5/26
U.S. Cl. 430—338 19 Claims

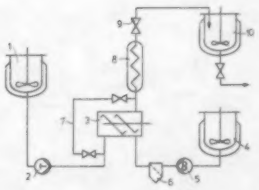
1. An article with a single imageable layer carried on a substrate, said layer comprising a polymeric binder, a combination of at least two leuco dyes, an acidic material, and nitrate salt, said leuco dyes being colorless compounds which when subjected to an oxidation reaction form colored products, said acidic material being present in said layer in a molar concentration of at least 0.2 times that of the nitrate ion in said nitrate salt, said nitrate salt having a cation which is nonreactive with said leuco dyes and said nitrate salt capable of liberating an oxidizing amount of HNO_3 or oxides of nitrogen when heated to a temperature of no more than 200° C. for 60 seconds, said layer being capable of providing an at least dark, stable image upon imagewise oxidation.

4,379,836

PROCESS FOR THE PRODUCTION OF DISPERSIONS AND PHOTOGRAPHIC MATERIALS

Hildegard Schnöring, Wuppertal; Karl-Wilhelm Schranz, and Günther Koepke, both of Odenthal, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 24, 1981, Ser. No. 295,641
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1980, 3033000
Int. Cl.³ G03C 1/40
U.S. Cl. 430—377 11 Claims



1. In the process for the production of a dispersion of at least one liquid organic phase containing a hydrophobic, photographically-active substance,

and at least one aqueous phase containing a binder,

by combining the phases in a dispersion by introducing said organic phase and said aqueous phase separately and simultaneously into a dispersion unit,

and combining said phases in said unit at a temperature maintained at 100° C. or higher and under a pressure maintained at least 1 bar so as to disperse the phases in the dispersion unit.

4,379,837

PROCESS FOR THE PREPARATION OF SILVER HALIDE EMULSIONS, PHOTOGRAPHIC MATERIALS, AND A PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES

Otto Lapp; Harald von Rintelen; Franz Moll, all of Leverkusen-Bayerwerk, and Lothar Endres, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,535

Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019733

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—434 10 Claims

1. A process for the preparation of a silver halide emulsion in which a fine-grained silver halide emulsion I is blended in the presence of at least one silver halide solvent with a silver halide emulsion II which is less soluble than said emulsion I and in which the blend is held for a sufficient time to effect redissolving of emulsion I and precipitation on emulsion II wherein emulsion I has been prepared by reaction of a soluble silver salt and a soluble halide in the presence of at least one compound inhibiting grain growth.

4,379,838

PHOTOSENSITIVE PHOTOGRAPHIC RECORDING MATERIAL COMPRISING A DYED LAYER

Günter Helling, Cologne; Hans Öhlschläger, Bergisch-Gladbach; Wolfgang Himmelmann, Leverkusen, and Manfred Beck, Odenthal, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 196,933, Oct. 14, 1980, abandoned. This application Oct. 5, 1981, Ser. No. 308,521

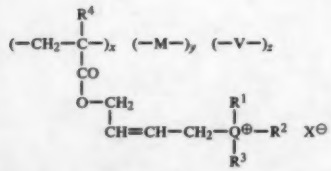
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1979, 2941819

Int. Cl.³ G03C *1/84*

U.S. Cl. 430—518 5 Claims

1. In a photographic recording element, comprising a layer support, at least one layer comprised of photosensitive silver halide emulsion supported on said layer support, and at least one other supported layer as a dyed layer containing uniformly distributed therein a polymeric mordant for acid dyes and at least one acid dye,

the improvement according to which the mordant in said dyed layer consists essentially of a polymer obtained by addition polymerization and corresponding to the following formula



in which

Q is a nitrogen or phosphorus atom;

R^1, R^2 and R^3 are the same or different and represent alkyl radicals of 1 to 12 carbon atoms or carbocyclic radicals selected from the group consisting of cycloalkyl, aralkyl and aryl radicals containing from 5 to 12 carbon atoms, which may be substituted with halogen, nitro, cyano, alkyl, alkoxy, alkylthio or alkoxy carbonyl in which the alkyl contains from 1 to 4 carbon atoms,

or two of the substituents R^1, R^2 and R^3 together represent a group necessary for completing a 5- or 6-membered heterocyclic ring selected from the group consisting of pyrrolidine, piperidine or morpholine rings;

R^4 represents hydrogen or methyl,

$X^{\ominus}$ represents a photographically inert anion,

V represents the residue of a polymerized monomer polymerizable by addition polymerization containing at least two polymerizable ethylenically unsaturated groups; and corresponds to the following formula

in which

n is an integer greater than 1,

R^5 represents an organic radical with two or more bonds which is made up of alkylene, arylene, aralkylene, cycloalkylene groups, ester, sulphonyl ester, amide, sulphonamide groups, etheroxygen and thioethersulphur atoms and also combinations of the above-mentioned groups and atoms,

R^6 is a hydrogen atom or a methyl radical,

M represents the residue of a polymerized monomer containing one polymerizable ethylenically unsaturated group;

x, y and z represent the figures indicating the proportions of the monomer in the polymer, such that

x stands for 10 to 99 mole %,

y stands for 0 to 90 mole %,

z stands for 0 to 5 mole %.

4,379,839

METHOD FOR DETECTING CANCER

Sol Spiegelman, New York, N.Y., assignor to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation of Ser. No. 872,855, Jan. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 799,810, May 23, 1977, abandoned. This application Feb. 29, 1980, Ser. No. 126,166

Int. Cl.³ C12Q *1/70*; G01N *33/54, 33/56, 33/60*

U.S. Cl. 435—5 14 Claims

1. A method for the detection of breast cancer in a human subject, which method comprises immunologically assaying a sample from said subject for breast cancer specific viral related protein, the assay utilizing the cross-reactivity of the protein with antibodies to Mason-Pfizer Monkey Virus or murine mammary tumor virus.

4,379,840

QUANTITATIVE ANALYSIS OF URIC ACID

Günther Gorka, Wiesbaden-Auringen, and Klaus Stinshoff, Munich, both of Fed. Rep. of Germany, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Jun. 29, 1981, Ser. No. 278,677

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1980, 3025170

Int. Cl.³ C12N *9/04, 9/96*; C12Q *1/30, 1/32*

U.S. Cl. 435—10 6 Claims

1. In a process for determining the uric acid content of biological material by contacting the biological material with a reagent composition containing uricase, catalase, aldehyde dehydrogenase, a lower alkanol, and nicotinamide adenine dinucleotide or nicotinamide adenine dinucleotide phosphate,

the improvement which comprises contacting the biological material with a reagent composition comprising:

(a) from about 25 to 500 IU/liter of uricase;

(b) from about 300 to 1000 kIU/liter of catalase;

(c) from about 100 to 500 IU/liter of aldehyde dehydrogenase;

(d) from about 0.5 to 2 mol/liter of ethanol;

(e) from about 0.2 to 1.5 mmol/liter of NAD^+ or $NADP^+$;

(f) from about 20 to 100 mmol/liter of buffer; and

(g) from about 0.0001 to 0.1 mol/liter of 2-mercaptosuccinic acid.

4,379,841

ASSIMILATION TEST FOR IDENTIFYING YEASTS

Billy H. Cooper, Dallas, Tex., assignor to Abbott Laboratories

Continuation-in-part of Ser. No. 184,877, Sep. 8, 1980, abandoned. This application Oct. 2, 1981, Ser. No. 308,210

Int. Cl.³ C12Q *1/04;* C12N *1/16;* C12R *1/645, 1/72*

U.S. Cl. 435—34 12 Claims

1. A method for identifying a clinically significant yeast isolate which comprises inoculating culture media containing as a sole carbon source 4-hydroxybenzoic acid, 3,4-dihydroxybenzoic acid or a mixture of 4-hydroxybenzoic acid and 3,4-dihydroxybenzoic acid, with a yeast colony obtained from a human specimen; and then observing the ability of the yeast colony to assimilate the carbon source as an indication of a specific yeast isolate.

4,379,842

PROCESS FOR THE MANUFACTURE OF 1α-HYDROXYDEHYDROEPIANDROSTERONE

Akiko Fujiwara, Kamakura; Chikara Miyamoto, Yokohama, and Toru Okuda, Yakuoji, all of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 121,120, Feb. 13, 1980. This application Aug. 24, 1981, Ser. No. 295,281

Int. Cl.³ C12P *33/06;* C12R *1/80, 1/66*

U.S. Cl. 435—58 9 Claims

1. A process for producing 1-α-hydroxydehydroepiandrosterone comprising adding dehydroepiandrosterone or 3-acyldehydroepiandrosterone as a substrate to microorganisms of the species Penicillium oxalicum or Aspergillus terreus fermenting in a culture medium, the addition of substrate being made at a time when the microoganisms are in a stationary phase of growth and for a time sufficient for conversion of the substrate.

4,379,843

IMMOBILIZATION OF POLYNUCLEOTIDES AND POLYPEPTIDES WITH TRITYLATED POLYSACCHARIDES

Peter Cashion, 821 Hanson St., Fredericton, New Brunswick, Canada (E3B 4A6)

Filed Jan. 26, 1981, Ser. No. 228,258

Int. Cl.³ C12N *11/10;* C12P *19/34;* C12N *11/12, 11/06*

U.S. Cl. 435—178 40 Claims

1. A composition of matter, comprising a polynucleotide or polypeptide attracted to a substantially hydrated polysaccharide through a triphenylmethyl ether group bonded to said polysaccharide.

4,379,844

BIOCONVERSION OF INDUSTRIAL CELLULOSIC PULP MATERIALS TO PROTEIN ENRICHED PRODUCT

Murray M. Young, Waterloo, Canada, assignor to University of Waterloo, Waterloo, Canada

Continuation-in-part of Ser. No. 3,998, Jan. 17, 1979, abandoned. This application Mar. 4, 1981, Ser. No. 240,329

Int. Cl.³ C12N *1/24, 1/22*

U.S. Cl. 435—251 5 Claims

1. A process for the formation of proteinaceous material, which consists of:

(a) aerobically fermenting a sterile mixture of a cellulosic wood product in divided form selected from the group consisting of wood pulp and paper stock and a solution of non-carbon nutrient supplement in a culture of the fungus, *Chaetomium cellulolyticum,* at a pH of about 5 to about 7 and at a temperature of about 30° to about 45° C. for a time sufficient to grow the fungus and provide a solid mass consisting of about 20 to about 80% DM of the fungus and the balance of unfermented cellulosic material, and

(b) separating the resulting solid mass from the fermentation medium.

4,379,845

YEAST PROCESS AND PRODUCT

Michael S. Ripka, Huntington, Conn., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jul. 23, 1981, Ser. No. 286,111

Int. Cl.³ C12N *1/16, 1/18*

U.S. Cl. 435—255 9 Claims

1. An improved process for culturing yeast which comprises: purifying molasses by passing the molasses through an ultrafiltration device effective to reject solids having molecular weights greater than about 30,000 daltons to produce a first permeate, and passing the first permeate through at least one additional filtration device having an average pore diameter of from about 0.2 to about 1.2 microns to produce a yeast culture medium, wherein the filtration devices are effective in combination to reduce the microorganism count to a level effective to produce yeast suitable for food use; innoculating the yeast culture medium with yeast; and subjecting the yeast and yeast culture medium to conditions effective to propagate the yeast.

4,379,846

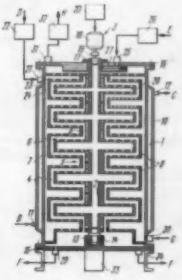
FERMENTATION APPARATUS

Alexandr N. Shkidchenko, Puschino, mikroraion "G", 30, kv. 51; Boris F. Nesterov, Puschino, mikroraion "V", 24, kv. 62; Vyacheslav G. Sharov, Puschino, mikroraion "V", 22, kv. 45, and Boris I. Smolin, Puschino, 25, kv. 5, all of Moskovskaya oblast, U.S.S.R.

Filed Apr. 27, 1981, Ser. No. 257,598

Int. Cl.³ C12M *1/02, 1/06, 1/14*

U.S. Cl. 435—316 7 Claims



1. A fermentation apparatus for use with liquid substrates comprising:

a temperature-controlled jacket;

a housing defined by walls having an inner surface, the housing being disposed inside said temperature-controlled jacket and adapted to be filled with said liquid substrate;

an agitation means having a shaft with stirrers accommodated in the interior of said housing, the shaft of the agitating means and the walls of said housing being made hollow and being made from a capillary-porous material;

a first group of elements intended for the cultivation of a layer of microorganisms thereon disposed inside said housing and acting to expand the useful interior surface of the apparatus;

a second group of elements intended for the cultivation of a layer of microorganisms thereon disposed inside said housing and acting to expand the useful interior surface of the apparatus;

a gap formed between said groups of elements; and

at least one said group of elements arranged to be capable of

movement relative to another said group of elements such that during the movement the elements of this group act to control the thickness of said layer of microorganisms being cultivated in said gap.

4,379,847

SUSPENDING MEDIUM FOR IMMUNOLOGIC REACTIONS

Mitchell J. Fruitstone, Miami, Fla.; Michele M. Tilly, Calgary, Canada, and Betty G. Pixton, Miami, Fla., assignors to American Hospital Supply Corporation, Evanston, Ill.

Continuation-in-part of Ser. No. 76,716, Sep. 19, 1979, Pat. No. 4,259,207. This application Jan. 14, 1981, Ser. No. 225,098
The portion of the term of this patent subsequent to Mar. 31, 1998, has been disclaimed.
Int. Cl.³ G01N *33/54, 31/02;* C09K *3/00;* G01N *33/50*
U.S. Cl. 436—8 28 Claims

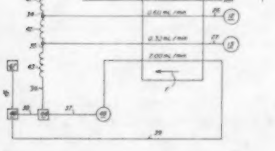
1. A suspending medium for an immunologic reaction comprising gelatin, having a Bloom rating from about 75 to about 300 at a concentration such that the Bloom rating times concentration in weight percent is from about 40 to about 150; albumin, at a concentration of from about 3.0 wt. % to about 7.0 wt. %; sufficient organic solute to provide an osmolality of from about 150 mOsm/kg. H_2O to about 450 mOsm/kg. H_2O; sufficient salt of an alkali or alkaline earth metal to provide an ionic strength equivalent to about a 0.01 molar to about a 0.10 molar solution of sodium chloride; and a pH from about 6.0 to about 8.0.

4,379,848

METHOD OF ANALYZING AN AQUEOUS LIQUID FOR HEXACYANOFERRATES

David C. Yeaw, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,621
Int. Cl.³ G01N *31/22*
U.S. Cl. 436—84 16 Claims



1. A method for detecting hexacyanoferrates in an aqueous liquid, the method comprising the steps of:

(a) forming an alkaline reaction system comprising the aqueous liquid and a cobaltic complex of tris-1,10-phenanthroline or tris-2,2'-bipyridyl;

(b) acidifying the reaction system to effect a detectable change in the spectral density thereof indicative of the presence of hexacyanoferrates in the aqueous liquid; and

(c) observing the detectable change indicative of the presence of hexacyanoferrates.

4,379,849

METHOD AND MEANS FOR THE EXAMINATION OF UNCOAGULATED BLOOD

Ken Heimreid, Brananveien 44 B, 3940 Heistad, Norway

Filed Sep. 26, 1980, Ser. No. 191,818
Claims priority, application Norway, Oct. 4, 1979, 793190
Int. Cl.³ B01D *21/26;* G01N *33/16*
U.S. Cl. 436—177 5 Claims

1. A method for facilitating the examination of uncoagulated blood comprising (1) filling the blood into a plastic test tube, (2) placing in the upper layer of the blood one or more bodies of glass or another suitable material with a surface whose characteristics correspond to glass, (3) placing above said one or more bodies an overlying layer of small beads or other suitable particles whose specific gravity is such that the small beads or other suitable particles become embedded as reinforcement in the fibrin layer following centrifugation and (4) centrifuging the blood while said body or bodies is in friction contact with the interior surface of the tube and pressing said body or bodies through the blood during said centrifugation.

4,379,850

HEMOLYTIC METHOD FOR THE KINETIC DETERMINATION OF ANTISTREPTOLYSIN O ANTIBODIES IN BLOOD OR SERUM SAMPLES, USING OXIDIZED STREPTOLYSIN O

Antonio Ricci, Monteriggioni, Italy, assignor to Diesse Diagnostica Senese S.r.l., Milan, Italy

Filed Jun. 22, 1981, Ser. No. 276,442
Claims priority, application Italy, Jul. 3, 1980, 23215 A/80
Int. Cl.³ G01N *33/54*
U.S. Cl. 436—517 16 Claims

1. A hemolytic method for the kinetic determination of antistreptolysin O antibodies (ASO) in a whole blood sample, consisting of:

reacting a first reagent containing a single dose of oxidized streptolysin O (SO) with the specific antibodies which may be present in the blood sample under examination;

allowing the necessary time to pass for the reaction between the oxidized SO and said antibodies to take place;

returning the oxidized SO to its reduced state by adding a second reagent;

measuring the rate of hemolysis; and

comparing said rate of hemolysis with the rate of hemolysis shown graphically for samples of known ASO titre, thus obtaining the kinetic determination of the ASO titre of the blood sample under examination.

4,379,851

TINTED BOROSILICATE GLASSES

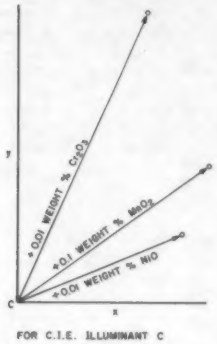
Paul S. Danielson, Corning; Ronald P. Mattison, Big Flats, and Albert J. Werner, Horseheads, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 28, 1982, Ser. No. 393,059
Int. Cl.³ C03C *3/08*
U.S. Cl. 501—66 2 Claims

1. A transparent glass which, after thermal tempering, exhibits a light gray-brown color and demonstrates such chromaticity (x, y) and luminous transmittance (Y) values that x ranges

between about 0.3440–0.3500, y ranges between about 0.3400–0.3525, and Y ranges between about 37–52, consists essentially, expressed in terms of weight percent on the oxide basis, of

SiO_2—80–82
B_2O_3—11.25–12



Na_2O—5.25–6
Al_2O_3—1.9–2.1
MnO_2—0.05–0.5
NiO—0.01–0.07
Cr_2O_3—0.005–0.03.

4,379,852

BORIDE-BASED REFRACTORY MATERIALS

Tadahiko Watanabe, Saga, and Shinichi Kono, Ikoma, both of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 6, 1981, Ser. No. 241,235
Claims priority, application Japan, Aug. 26, 1980, 55-117362
Int. Cl.³ C04B *35/58*
U.S. Cl. 501—87 **6 Claims**

1. A refractory sintered body composed essentially of

(a) at least 30% by weight of at least one metal boride selected from the group consisting of MB_2 type diborides of titanium, vanadium, niobium, tantalum, chromium, molybdenum, manganese, zirconium, hafnium, and aluminum and M_2B_5 type borides of molybdenum and tungsten,

(b) from 0.01 to 50% by weight of at least one binder ingredient selected from the group consisting of the borides of nickel, iron, cobalt, manganese and titanium other than the MB_2 type diborides and alloys of nickel and phosphorus, and

(c) from 0.1 to 50% by weight of at least one additive ingredient selected from the group consisting of WC, TiC, TaC, NbC, VC, ZrO_2, TiN, ZrN, TaN, and VN, the balance being substantially the metal boride of the component (a), or

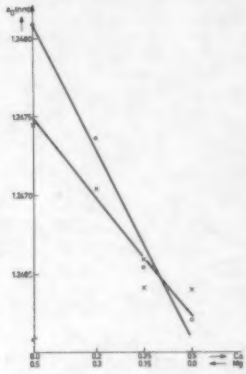
(d) the metal boride of the component (a) and up to 40% by weight, based on the sintered body, of at least one MB type boride of a metal selected from the group consisting of tantalum, niobium, tungsten, zirconium, hafnium, molybdenum, and vanadium.

4,379,853

MAGNETIC DEVICE HAVING A MONOCRYSTALLINE GARNET SUBSTRATE BEARING A MAGNETIC LAYER

Dieter Mateika, Ellerbek, and Rolf Laurien, Pinneberg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 14, 1980, Ser. No. 168,227
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928176; Mar. 7, 1980, 3008706
Int. Cl.³ C04B *35/50*
U.S. Cl. 501—135 **4 Claims**



1. A single crystal on the basis of rare earth metal gallium garnet, characterized by the composition

$$A_{3-x}^{3+}B_x^{2+}Ga_{3-x-2y}^{3+}C_y^{2+}D_{x+y}^{4+}O_{12},$$

wherein

A=gadolinium and/or samarium and/or neodym and/or yttrium

B=calcium and/or strontium

C=magnesium

D=zirconium and/or tin

and $O<X\leqq 0.7$; $O<y\leqq 0.7$ and $x+y\leqq 0.8$.

4,379,854

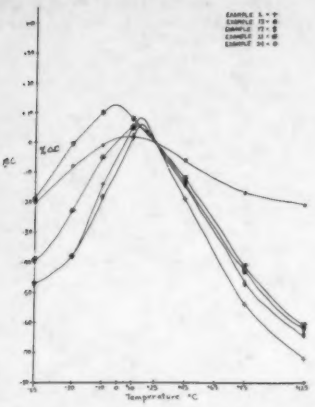
LOW TEMPERATURE FIRING (1800°-2100° F.) OF BARIUM TITANATE WITH FLUX (LEAD TITANATE-BISMUTH TITANATE-ZINC OXIDE AND BORON OXIDE)

Jakob C. K. Soong, State College, Pa., assignor to Erie Technological Products, Inc., Erie, Pa.

Filed Feb. 6, 1981, Ser. No. 232,143
Int. Cl.³ C04B *35/46*
U.S. Cl. 501—138 **1 Claim**

1. A method for making a dense ceramic dielectric body possessing very high dielectric constant at 25° C. which consists essentially of firing at between 1800° and 2100° F. a body of mixed powders of ceramic and flux, said ceramic powders consisting essentially of powders of barium titanate and powders of $SrZrO_3$ as cubic point shifter, and said flux powders consisting essentially of 10 parts by weight/100 of the aforesaid ceramic powders and said flux powders consisting essentially of powders of lead titanate, powders of bismuth titanate, powders of metal oxide flux selected from the group consisting of

powders of ZnO and powders of B_2O_3, the weight of the bismuth titanate and lead titanate powders being substantially



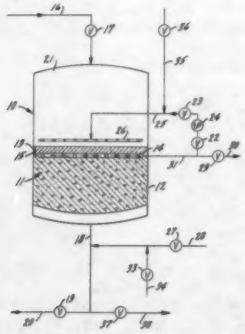
twice the weight of the powders of ZnO and B_2O_3, and ZnO being 24 to 40% and B_2O_3 0 to 12% by weight of the flux.

4,379,855

METHOD OF ION EXCHANGE REGENERATION

Peter E. Down, Summit, and Walter J. Tomlinson, Jr., Harrington Park, both of N.J., assignors to Ecodyne Corporation, Chicago, Ill.

Filed Jul. 1, 1981, Ser. No. 279,525
Int. Cl.³ B01J *49/00*
U.S. Cl. 521—26 **11 Claims**



1. A method of upflow regeneration of a spent stratified bed of ion exchange resin particles in which one part of said bed is a body of particles of a first resin occupying the lower part of a vessel and another part of said bed is a body of particles of a second resin deposited on top of said body of first resin particles, said method comprising the steps of:

A. passing a regenerant solution upwardly through said body of first resin particles;

B. withdrawing from said vessel the regenerant solution that has passed through said first resin particles essentially at the interface between said first and second resins before such regenerant solution can pass upwardly through said second resin particles;

C. recycling at least some of such withdrawn regenerant solution to said vessel above said second resin particles;

D. passing such recycled regenerant solution downwardly through said second resin particles with sufficient force to prevent upward expansion of said bed; and

E. withdrawing said recycled regenerant solution from said vessel essentially at said interface before it can pass into said body of first resin particles.

4,379,856

POLYURETHANE FOAM MOLDING WITH ZONES OF DIFFERENT INDENTATION HARDNESS AND A PROCESS FOR ITS PRODUCTION

Reinhard Samaritter; Winfried Schoberth, and Robert Volland, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 15, 1982, Ser. No. 339,595
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1981, 3102140
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—51 **11 Claims**

1. A polyurethane molding having zones of different hardness in which the polyurethane foam molding is a reaction product of:

a a polyether polyol component containing at least two hydroxyl groups and having a molecular weight of from 400 to 10,000 in which at least 10 wt. % of the hydroxyl groups are primary hydroxyl groups; and

b a polyisocyanate component which is a mixture of diphenyl methane diisocyanates and oligomeric polyphenyl polymethylene polyisocyanates which mixture contains from 60–90 wt. % 4,4′-diphenyl methane diisocyanate and from 3 to 30 wt. % 2,4′-diphenyl methane dissocyanate,

said reaction product having (i) zones of different hardness as indicated by a difference between the indices of the reaction mixture for those zones and (ii) transition zones between said zones (i) which transition zones are free from any hardening.

4,379,857

INSULATION COMPOSITION

Douglas E. Hansen, Kansas City, Mo.; Steven D. Johnson, Prairie Village, Kans., and Richard L. Motko, Kansas City, Mo., assignors to Cook Paint and Varnish Company, Kansas City, Mo.

Filed Oct. 28, 1981, Ser. No. 316,041
Int. Cl.³ C08J *9/22*
U.S. Cl. 521—54 **14 Claims**

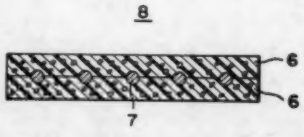
1. An insulating composition comprising in combination a liquid binder, a heat expanded polystyrene material in bead or granular form and a reinforcing pigment, said liquid binder comprising a 95:5 to 50:50 mixture, by weight of an acrylic or vinyl polymer emulsion and an alkali metal silicate, said expanded polystyrene being present in an amount ranging from 5 to 25 percent by weight of said composition.

4,379,858

FOAMED PLASTICS

Hirosuke Suzuki, 4-21-8 Kotesashi-cho, Tokorozawa, Japan

Filed Aug. 23, 1982, Ser. No. 410,325
Claims priority, application Japan, Aug. 28, 1981, 56-134934
Int. Cl.³ C08J *9/24*
U.S. Cl. 521—54 **1 Claim**



1. A melt molded foamed plastic composition comprising a tetrafluoroethylene-perfluoroalkyl vinyl ether copolymer

resin matrix and stretched porous resin fragments selected from the group consisting of polytetrafluoroethylene, polyethylene and polypropylene wherein said porous fragments have a porosity of 40 to 90%.

4,379,859

PRE-FOAMED PARTICLES OF POLYPROPYLENE RESIN AND PROCESS FOR PRODUCTION THEREOF

Kuninori Hirosawa, Isehara, and Sumio Shimada, Hiratsuka, both of Japan, assignors to Japan Styrene Paper Corporation, Tokyo, Japan

Filed Nov. 19, 1981, Ser. No. 322,917

Claims priority, application Japan, Nov. 22, 1980, 55-164786

Int. Cl.³ C08J 9/18

U.S. Cl. 521—59 **9 Claims**

1. Substantially non-crosslinked pre-foamed particles of a a propylene copolymer resin selected from the group consisting of an ethylene/propylene random copolymer or a mixture of an ethylene/propylene random copolymer with low density polyethylene and/or an ethylene/vinyl acetate copolymer as a base resin, provided that the ethylene/propylene random copolymer has an ethylene contents of 1 to 20% by weight.

4,379,860

POROUS, POWDERY POLYPROPYLENE

Walter Fickel, Erlenbach, and Gerhard Ries, Obernburg, both of Fed. Rep. of Germany, assignors to Akzo NV, Arnhem, Netherlands

Filed Jun. 30, 1981, Ser. No. 279,045

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1980, 3026762

Int. Cl.³ C08J 9/26

U.S. Cl. 521—61 **11 Claims**

1. Process for the production of porous, powdery polypropylene, comprising slowly cooling down to approximate room temperature, hot solutions of polypropylene in pentaerythrol ester, thereby forming a solidified mass, and extracting the solidified mass with an extractant in which pentaerythrol is soluble.

4,379,861

PROCESS FOR THE PRODUCTION OF POLYURETHANES USING MORPHOLINE COMPOUNDS AS CATALYSTS

Peter Haas, Haan, and Hans-Albrecht Freitag, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

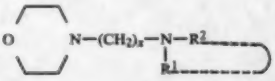
Filed Nov. 27, 1981, Ser. No. 325,539

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1980, 3046905

Int. Cl.³ C08G 18/14

U.S. Cl. 521—115 **5 Claims**

1. A process for the production of polyurethanes by the reaction of compounds with a molecular weight of 400 to 10000 having at least two isocyanate reactive hydrogen atoms with polyisocyanates in the presence of catalysts having tertiary amino groups and optionally in the presence of chain lengthening agents of molecular weight 32 to 400, foam stabilizers, water and/or organic blowing agents and other auxiliary agents and additives, the improvement whereby the catalysts used are morpholine derivatives of the general formula



wherein

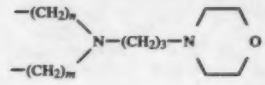
X denotes an integer from 3 to 6, and

R^1 and R^2 are identical or different and

(a) represent a C_1–C_6-alkyl or C_6–C_{10}-cycloalkyl group or

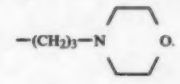
(b) form a heterocyclic ring containing 4–7 C-atoms, which heterocyclic ring may contain hetero groups in addition to the N-atom and wherein the additional hetero groups may be substituted by a C_1–C_3 alkyl, or

(c) together represent a group of the formula



in which n and m represent identical or different integers from 2 to 4, preferably 2, or

(d) represent



4,379,862

PROCESS FOR THE PREPARATION OF POLYURETHANE RESINS USING LOW MOLECULAR WEIGHT POLYHYDROXYL COMPOUNDS PREPARED BY THE CONDENSATION OF FORMALDEHYDE

Kuno Wagner, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 122,931, Feb. 20, 1980, Pat. No. 4,301,310, which is a division of Ser. No. 829,173, Aug. 30, 1977, Pat. No. 4,219,508. This application Jul. 10, 1981, Ser. No. 282,219

Claims priority, application Fed. Rep. of Germany, May 11, 1977, 2721186

Int. Cl.³ C08G 18/14

U.S. Cl. 521—158 **1 Claim**

1. In a process for the preparation of cellular or non-cellular polyurethane resins by the reaction of

(a) polyisocyanates with

(b) compounds with a molecular weight of between 32 and 400 having at least two active hydrogen atoms, and optionally

(c) compounds with a molecular weight of between 400 and 10,000 having at least two active hydrogen atoms, and optionally

(d) blowing agents, catalysts and other known additives,

the improvement which comprises using as component (b) products prepared by the condensation of formaldehyde in an aqueous reaction medium in the presence of metal compounds as catalysts and of compounds capable of enediol formation as cocatalysts, by introducing synthesis gases containing formaldehyde continuously or discontinuously at temperatures of between 10° and 150° C. into an absorption liquid comprising

(a) 5 to 99% by weight of water,

(b) 0.1 to 90% by weight of compounds capable of enediol formation as cocatalysts,

(c) 0 to 20% by weight of soluble or insoluble metal compounds as catalysts optionally bound to high molecular weight carriers, and

(d) 0 to 60% by weight of one or more monohydric or higher hydric low molecular weight alcohols and/or higher molecular weight polyhydroxyl compounds

and having a pH of 3 to 10, and the formaldehyde being condensed at the same time or, if the absorption solution contains no catalyst, the formaldehyde being condensed by the addition of catalyst, stopping the condensation of formaldehyde with itself by cooling and/or by inactivation of the catalyst with acids in known manner when the reaction mixture has a residual formaldehyde content of from 0 to 10% by weight; removing the catalyst in known manner; and reducing the aldehyde and keto groups present in the reaction product to hydroxyl groups.

4,379,863

COPOLYMER COMPOSITION AND DELIVERY SYSTEM FOR PROVIDING A PROTECTIVE BARRIER FILM FOR THE SKIN

Martin Snyder, North Plainfield, N.J., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Jan. 13, 1981, Ser. No. 224,700
Int. Cl.³ C08J 7/02
U.S. Cl. 523—105 19 Claims

1. A film-former composition for application to the skin for providing a generally water insoluble, breathable skin barrier film for shielding peristomal skin, perineal skin and the like which comprises on the basis of weight from about 5% to about 12.5% of an acrylic resin selected from the group comprising butyl methacrylate, n-butyl/iso-butyl methacrylate copolymer dissolved in a physiologically acceptable relatively volatile solvent selected from C_3–C_{10} alkanols and including a and minor proportion of a physiologically acceptable plasticizer.

4,379,864

POLYMERIC COMPOSITIONS AND HYDROGELS FORMED THEREFROM

Paul M. Gallop, Chestnut Hill, and Donald R. Korb, Boston, both of Mass., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

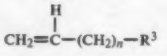
Division of Ser. No. 10,992, Feb. 9, 1979, Pat. No. 4,267,295.
This application Mar. 5, 1981, Ser. No. 240,739
Int. Cl.³ C08F 220/20
U.S. Cl. 523—106 33 Claims

1. A hydrogel comprising of hydrophilic polymer comprising the polymerization product of:

a first monomer comprising a dihydroxyalkyl acrylate or dihydroxyalkyl methacrylate,

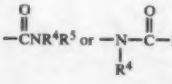
a second monomer comprising a substantially water insoluble alkyl acrylate or alkyl methacrylate, the mole ratio of said first monomer to said second monomer varying within the range from about 1:3 to about 20:1;

a third monomer comprising a compound selected from the group consisting of:

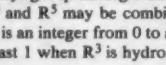


(a)

where R^3 is hydroxyl, alkoxy having 1 to 6 carbon atoms, a sulfonic acid moiety,

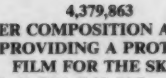


wherein R^4 and R^5 are independently selected from the group consisting of hydrogen and an unsubstituted or substituted alkyl group having from 1 to about 3 carbon atoms, or R^4 and R^5 may be combined to form a cyclic group, and n is an integer from 0 to about 4, except that n must be at least 1 when R^3 is hydroxyl;



(b)

where R^6 is hydroxyalkoxy having 1 to 6 carbon atoms or $-NR^7R^8$ where R^7 and R^8 are independently selected from hydrogen and lower alkyl groups having 1 to 4 carbon atoms;



(c)

where R^9 is hydroxyalkoxy having from 1 to about 6 carbon atoms or vinyl acetate; and

(d) mixtures thereof: the total of the molar quantities of said first and second monomers to the molar quantity of said third monomer being in the range of 1:1 to 1:0.2,

which is substantially hydrated with water.

4,379,865

BINDER FOR CASTING SAND AND RESIN-COATED GRAINS OF SAND

Kazuyuki Nishikawa, Toyohashi, and Katsumi Hirao, Akashi, both of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka and Shinto Kogio, Ltd., Nagoya, both of, Japan

Filed Jan. 23, 1981, Ser. No. 227,875
Claims priority, application Japan, Feb. 1, 1980, 55-11322
Int. Cl.³ B22C 1/00, 11/22; C08G 12/00, 12/12
U.S. Cl. 523—139 7 Claims

1. A composition consisting essentially of a mixture of approximately 43 to 60 wt. % of cellulose acetate which is soluble in acetone, has an acetylation degree of from 48 to 57% and has a limiting viscosity number of from 0.15 to 2.2 measured in an acetone solution thereof at 25° C., from 17 to 20 wt. % of a plasticizer for said cellulose acetate, and from 20 to 40 wt. % of a thermosetting resin precondensate selected from the group consisting of acetone-soluble alkylated methylolmelamines, acetone-soluble alkylated methylolureas and mixtures thereof.

4,379,866

PLUGGING REFRACTORY MATERIAL HAVING RESIN BINDER SYSTEM

Francis W. Henry, Jr., and Subrata Banerjee, both of Glen Burnie, Md., assignors to General Refractories Company, Bala Cynwyd, Pa.

Filed Sep. 14, 1981, Ser. No. 301,760
Int. Cl.³ C08G 8/28
U.S. Cl. 523—140 28 Claims

1. A plugging refractory comprising a refractory material and a resin binder system, said resin binder system comprising a phenol-formaldehyde or resorcinol polymer resin and a formaldehyde-source, cross-linking agent, the formaldehyde-source, cross-linking agent being tris (hydroxymethyl) nitromethane.

4,379,867

WRITING MEDIUM FOR BALL POINT WRITING INSTRUMENT

Tsunoda Noriaki, No. 38, Shinmachi, Tanogun, Gunma-ken, Japan

Filed Aug. 6, 1981, Ser. No. 290,438
Int. Cl.³ C08K 5/10
U.S. Cl. 523—161 12 Claims

1. A writing medium for a ball point writing instrument comprising:

a pigment at least as a colorant,

a polynorbornane represented by the following formula in a repetition unit, and

a solvent solution for dissolving said polynorbornane and containing a low boiling point organic solvent having a boiling point of less than 180° C. and a high boiling point organic solvent having a boiling point of higher than 300° C.

4,379,868

METHOD FOR PRODUCING HYDROPHILIC FILLERS FOR PLASTICS AND RUBBERS

Frantisek Juracka, Pardubice, and Slavko Hudecek, Prague, both of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Continuation of Ser. No. 912,202, Jun. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 691,705, Jun. 1, 1976, abandoned. This application Jul. 25, 1980, Ser. No. 172,426

Int. Cl.³ C08L *47/00*

U.S. Cl. 523—201 **5 Claims**

1. A procedure for preparation of hydrophilic fillers for plastics and rubbers based on high-molecular weight compounds, insoluble in water, obtained by the copolymerization of unsaturated monomers insoluble in water and monomers soluble in water, especially suitable for the manufacturing of hygienic synthetic leathers, wherein a charge consisting of a monomer or a mixture of monomers insoluble in water selected from the group consisting of divinylbenzene, ethyleneglycol dimethacrylate and ethyleneglycol diacrylate is first subjected to emulsion polymerization until the conversion of the double bonds thereof is 40 to 70% complete, after which an addition consisting of a monomer or a mixture of monomers, soluble in water, selected from the group consisting of acrylic acid, methacrylic acid, and aminoesters and monoesters of polyhydric alcohols and amides thereof or their aqueous solution is added to the polymerizing dispersion, wherein the mass ratio of monomers insoluble and monomers soluble in water varies from 2:1 to 1:3 whereafter on completion of the polymerization the carboxylic groups, if desired, are neutralized in the latex-dispersion thus obtained.

4,379,869

CATIONIC LATICES AND THEIR ELECTRODEPOSITION

Bahram Siadat, and Joseph W. Raksis, both of Columbia, Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jan. 15, 1981, Ser. No. 225,337

Int. Cl.³ C08K *9/00*

U.S. Cl. 523—206 **15 Claims**

5. Method according to claim 1 in which the latex is made by copolymerizing diethyl amino ethyl methacrylate, butyl acrylate, methyl methacrylate, and ethyl acrylate.

4,379,870

REINFORCING MATERIAL FOR HYDRAULIC SUBSTANCES AND METHOD FOR THE PRODUCTION THEREOF

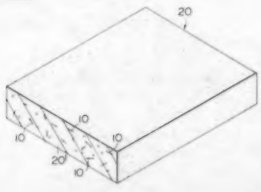
Hisashi Matsumoto, Iwakuni, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 51,387, Jun. 25, 1979, Pat. No. 4,297,414. This application Jun. 30, 1981, Ser. No. 279,235

Claims priority, application Japan, Jul. 7, 1978, 53-81917; Jul. 17, 1978, 53-86182; Dec. 20, 1978, 53-160804

Int. Cl.³ C08K *3/34;* D02G *3/00*

U.S. Cl. 523—221 **8 Claims**



1. A formed product comprising a hydraulic substance containing therein a reinforcing material consisting essentially of an elongated, stretched product of a synthetic resin having a thickness of 100 to 50,000 denier, having a length of 5 to 100 mm and having discontinuous protrusions over its entire length, the height of the protrusions being not less than 0.1 mm.

4,379,871

PROCESS FOR THE PRODUCTION OF CARBON BLACK CONTAINING PIGMENT-SYNTHETIC RESIN CONCENTRATES

Peter Werle, Arnsberg; Hans Gräf, Rodenbach, and Erwin Walter, Hörstein, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 641,604, Dec. 17, 1975, abandoned. This application Dec. 30, 1977, Ser. No. 865,968

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1975, 2500664

Int. Cl.³ C08J *3/20*

U.S. Cl. 523—331 **40 Claims**

1. In a process for the production of a pigment-synthetic resin concentrate containing an organic solvent soluble polymer and carbon black having rapid distributability in organic solvent media, the improvement consisting essentially of continuously homogenizing in a mixer (1) a carbon black containing pigment powder and (2) an organic solvent soluble synthetic resin with (3) an organic solvent for said synthetic resin as the sole solvent and in an amount sufficient to dissolve the synthetic resin, dispersing the pigment in the mixture, removing the solvent from the dispersion by drying and comminuting the resulting pigment-synthetic resin concentrate.

4,379,872

AMPHOTERIC AMINO SULFONATE DERIVATIVES OF EPOXY RESINS

Shin-Ichi Ishikura, Kyoto; Kazunori Kanda, Yao, and Ryuzo Mizuguchi, Yawata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

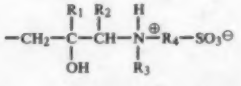
Filed Aug. 17, 1981, Ser. No. 293,077

Claims priority, application Japan, Aug. 22, 1980, 55-116292; Aug. 22, 1980, 55-116293

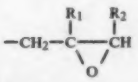
Int. Cl.³ C08G *59/14;* C08L *63/00*

U.S. Cl. 523—406 **11 Claims**

1. A water-dispersible modified epoxy resin composition having at least one terminal amphoteric amino sulfonate group of the formula:



wherein R_1 and R_2 are hydrogen or methyl, R_3 is hydrogen or C_1–C_{20} alkyl optionally substituted with higher alkylsulfinyl or higher alkanoyloxy, and R_4 is C_1–C_6 alkylene optionally subatituted with 2-hydroxyethyl, said composition being a reaction product of an epoxy resin having a plurality of terminal groups of the formula:



wherein R_1 and R_2 are as defined, with an amino sulfonate of the formula:

$$R_3—NH—R_4—SO_3M$$

wherein R_3 and R_4 are as defined, and M is a cation, with removal of said cation.

4,379,873

PROCESS FOR SETTING A LATEX OF A FILM FORMING POLYMER

Douglas Wilson, Weybridge, England, assignor to The British Petroleum Company Limited, London, England

Filed Jul. 23, 1981, Ser. No. 286,189

Claims priority, application United Kingdom, Aug. 1, 1980, 8025260

Int. Cl.³ C08K *3/34*

U.S. Cl. 524—7 1 Claim

1. A process for the delayed action setting of a composition comprising an anionic latex of polychloroprene or a styrene-butadiene rubber by the addition of a delayed action setting agent characterized in that the setting agent is a mixture of (1) a compound containing a multivalent metal cation, which metal cation compound has a solubility in the range of 0.1 g to 150 g per 100 C of water at 20° C. and which has a dissolution time greater than one minute selected from the group consisting of aluminum acetate, barium nitrate, cupric sulfate, lead acetate, calcium sulphate, calcium sulfate dihydrate, calcium sulfate hemihydrate, ferrous sulfate, cupric acetate, magnesium acetate, and magnesium carbonate, and (2) and alkali metal silico fluoride.

4,379,874

POLYMER COMPOSITION COMPRISING POLYACRYLONITRILE POLYMER AND MULTI-BLOCK COPOLYMER

Vladimir A. Stoy, 92 Clover La., Princeton, N.J. 08540

Filed Jul. 7, 1980, Ser. No. 166,032

Int. Cl.³ C08L *53/00, 33/20*

U.S. Cl. 524—27 10 Claims

1. A novel polymer composition comprised of polyacrylonitrile polymer and a multiblock copolymer with acrylonitrile and non-crystalline polymer sequences with an average number of said sequences per multiblock copolymer being equal and at least 2, said acrylonitrile sequence having a mean molecular weight of at least 500, said non-crystalline polymer sequence being comprised of at least about 10 units and constituting one or more highly polar units selected from the group consisting of acrylamide, N-substituted acrylamide, acrylic acid, esters of acrylic acid, salts of acrylic acid, hydrazides of acrylic acid and glutarimide.

4,379,875

COALESCING AID FOR HIGH NITRILE COPOLYMER LATEX COATINGS

Kenneth E. Samuels, Twin Lakes, and Wayne T. Wiggins, Aurora, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 31, 1980, Ser. No. 221,751

Int. Cl.³ C08K *5/34*

U.S. Cl. 524—104 11 Claims

1. A coating composition comprising a blend of (1) a latex produced by the polymerization of a major proportion of a monounsaturated nitrile and a minor proportion of at least one monovinyl monomer component copolymerizable therewith optionally in the presence of a preformed diene rubber, and (2) a coalescing agent which is (a) a solvent for (1), (b) has a boiling point between 100° and 300° C., and (c) does not azeotrope with water.

4,379,876

METHYL METHACRYLATE-BUTADIENE-STYRENE IMPACT MODIFIER POLYMERS, POLYVINYL CHLORIDE, COMPOSITIONS AND METHODS

Richard R. Clikeman, Newtown, Pa.; Donald H. Jones, Vincentown, N.J.; Thomas J. Shortridge, Levittown, and Edward J. Troy, Bristol, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jul. 11, 1980, Ser. No. 167,510

Int. Cl.³ C08K *5/05, 5/13;* C08F *220/14*

U.S. Cl. 524—109 7 Claims

1. Impact modifier composition comprising a methyl methacrylate-butadiene-styrene polymer prepared in two or more stages and containing about 50 to 90 parts polybutadiene or compolymer of polybutadiene and about 0.01 to 5 percent by weight of 1,1,3-tris (2-methyl-4-hydroxy-5-tert-butyl phenyl) butane.

4,379,877

FIRE RETARDANT THERMOPLASTIC MOLDING COMPOSITIONS

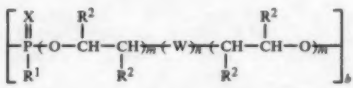
Usama E. Younes, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 26, 1981, Ser. No. 314,648

Int. Cl.³ C08K *5/52, 5/53;* C08L *85/02*

U.S. Cl. 524—123 3 Claims

1. A thermoplastic molding composition comprising a homogeneous mixture of a copolymer of a monovinyl aromatic monomer and an alpha, beta-unsaturated cyclic anhydride and an alternating copolymer having the formula:



wherein R^1 represents a halogen, a (C_1 to C_{10}) alkyl or halogenated (C_1 to C_{10}) alkyl group, hydroxy, a (C_1 to C_{10}) alkoxy or halogenated (C_1 to C_{10}) alkoxy group, an aryl or halogenated aryl group, and an aryloxy or halogenated aryloxy group; X may or may not be present and represents oxygen or sulfur; W represents at least one monomer selected from the group consisting of dienes, styrenes, vinylidene chloride, vinyl esters, acrylic and methacrylic esters, and acrylonitrile; each R^2 separately represents hydrogen, a (C_1 to C_4) alkyl group, or an aryl group; n represents an integer equal to or greater than 2; each m separately represents an integer from 1 to 20, and b represents an integer from 2 to 1000.

4,379,878

FOOD-GRADE VINYL HALIDE POLYMER COMPOSITIONS STABILIZED WITH MONOALKYLTIN COMPOUNDS

William A. Larkin, Morristown, N.J., assignor to M&T Chemicals Inc., Woodbridge, N.J.

Continuation-in-part of Ser. No. 913,795, Jun. 8, 1978, abandoned, which is a continuation-in-part of Ser. No. 707,702, Jul. 22, 1976, abandoned, which is a continuation of Ser. No. 343,648, Mar. 22, 1973, abandoned. This application Oct. 13, 1981, Ser. No. 310,954

Int. Cl.³ C08K *5/58*

U.S. Cl. 524—181 25 Claims

1. A stabilized vinyl halide polymer composition suitable for contact with food containing more than 0.15 parts per 100 parts of polymer of monoalkyltin compounds of formula:

$$n\text{—}C_8H_{17}Sn(SCH_2COOR)_3$$

where R is a linear or branched alkyl group of 8 carbon atoms.

4,379,879

HEAT RESISTANT RESIN COMPOSITION AND INSULATING WIRE USING THE SAME WHICH IS A COMPOSITION OF AN ACTIVE HYDROGEN COMPOUND AND THE REACTION PRODUCT OF A POLYVALENT ISOCYANATE AND A POLYVALENT CARBOXYLIC ACID ANHYDRIDE IN AN ORGANIC SOLVENT

Yasunori Okada, and Shozo Kasai, both of Hitachi, Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 3, 1981, Ser. No. 299,110
Claims priority, application Japan, Jul. 2, 1980, 55-91180
Int. Cl.³ C08L 79/08
U.S. Cl. 524—186 18 Claims

1. A heat resistant resin composition comprising:

(A) a reaction product obtained by reacting

(a) a polyvalent isocyanate having two or more isocyanate groups in the molecule,

(b) a polyvalent carboxylic acid having one or more acid anhydride groups in the molecule or a functional derivative thereof, and, if necessary,

(c) A polyvalent carboxylic acid having two or more carboxyl groups in the molecule or a functional derivative thereof,

in an organic solvent, and

(B) a compound having one or more active hydrogens in the molecule except for a phenolic compound,

said composition being able to be heated or not heated; and

from 0.1 to 10% by weight of said compound (B), based on the weight of the reaction product (A) being added to reaction product (A) to form said composition.

4,379,880

VINYL HALIDE POLYMER OF ENHANCED PLASTICIZER UPTAKE

William L. Schall, Grand Island, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 193,560, Oct. 3, 1980, Pat. No. 4,342,845. This application Aug. 5, 1981, Ser. No. 290,127
Int. Cl.³ C08F 2/02, 114/06; C08K 5/11
U.S. Cl. 524—297 16 Claims

1. A process for preparing a vinyl chloride polymer which comprises (a) polymerizing a reaction charge in bulk liquid phase in the presence of a polymerization initiator and an inert diluent consisting essentially of isobutane in an amount from about 0.1 to less than 50 weight percent of the reaction charge, said charge comprising vinyl chloride as the sole polymerizable monomer and (b) reducing the pressure on the resultant polymerized reaction charge to separate polymer product from diluent and unreacted monomer.

11. The polymer product of the process of claim 1.

12. The product of claim 11 containing a liquid organic plasticizer for vinyl halide polymer.

4,379,881

ADHESIVE SUITABLE FOR APPLICATION TO SKIN

Roger F. Peck, Stansted Mountfitchet, England, assignor to Smith and Nephew Associated Companies Limited, England

Filed Mar. 5, 1981, Ser. No. 240,987
Claims priority, application United Kingdom, Mar. 5, 1980, 8007410
Int. Cl.³ C08K 5/10
U.S. Cl. 524—315 9 Claims

1. An adhesive linear polyacrylate which has a K value of 90 to 110 and consists of 34% to 62% of n-butyl acrylate residues 62% to 34% of 2-ethylhexyl acrylate residues and 4% to 8% of acrylic acid residues.

4,379,882

HALOGEN-CONTAINING POLYOLEFIN COMPOSITION, AND METHOD FOR INACTIVATING HALOGENS THEREIN

Shigeo Miyata, Takamatsu, Japan, assignor to Kyowa Chemical Industry Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1981, Ser. No. 320,116
Claims priority, application Japan, Nov. 12, 1980, 55-158152
Int. Cl.³ C08K 3/20; C08F 6/00
U.S. Cl. 524—436 6 Claims

1. A polyolefin composition consisting essentially of

(a) 100 parts by weight of a polyolefin containing halogens derived from a polymerization catalyst and/or attributed to the after-halogenation of the polymer, and

(b) about 0.001 to about 10 parts by weight of an aluminum-magnesium hydroxide represented by the following formula

$$Mg_{1-x}Al_x(OH)_{2+x}mH_2O \quad (1)$$

wherein x is a positive number represented by $0<x\leqq 0.5$ and m is a positive number represented by $0\leqq m<2$, and having a BET specific surface area of no more than about 40 m^2/g.

4,379,883

CHEMICALLY-INITIATED INVERSE EMULSION POLYMERIZATION WITH Na, Li/Cl, Br SALT

David C. Zecher, Frederick, Md., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 106,214, Dec. 21, 1979, abandoned. This application Aug. 4, 1981, Ser. No. 289,847
Int. Cl.³ C08F 2/32
U.S. Cl. 524—801 10 Claims

1. In a chemically initiated water-in-oil emulsion polymerization process for making water-soluble anionic copolymers from at least two water-soluble, ethylenically unsaturated, addition polymerizable monomers, at least one of which is anionic, the improvement comprising: adding a salt selected from the group consisting of NaCl, NaBr, LiCl and LiBr to the aqueous phase of the water-in-oil emulsion prior to polymerization, and dispersing the aqueous phase and oil phase whereby the droplet size of the aqueous phase in the resulting emulsion is about 5 microns or less.

4,379,884

COPOLYMER BLEND OF IMPROVED IMPACT RESISTANCE

Fay W. Bailey, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 30, 1981, Ser. No. 335,771
Int. Cl.³ C08L 53/02
U.S. Cl. 525—96 13 Claims

1. A composition comprising:

(a) resinous, non-elastomeric block copolymer of conjugated diene and vinylarene and (b) copolymer of monovinylarene and olefinically unsaturated nitrile having the structure

$$CH_2=\underset{\displaystyle R}{\overset{|}{C}}-CN$$

wherein R is a member of the group consisting of hydrogen, an alkyl group having from 1–6 carbon atoms and a halogen; and wherein the amount of (b) in said composition ranges up to about 30 weight percent based upon the total weight of (a) and (b).

4,379,885

FLUOROCARBON COATING COMPOSITIONS

John D. Miller, Springdale, Pa., and Valentine J. Grunewalder, Bayville, N.J., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 29, 1980, Ser. No. 220,679
Int. Cl.³ C08L 63/00
U.S. Cl. 525—108 6 Claims

1. A coating composition having a resin solids content of from about 15% to about 35% and being especially useful as a primer for substrates consisting essentially of, on a resins solids basis:

(a) from about 10% to about 15% of a polyepoxide resin;

(b) from about 30% to about 45% of a thermoplastic acrylic resin; and

(c) from about 40% to about 55% of a fluorocarbon resin.

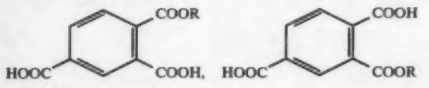
4,379,886

LIQUID COATING COMPOSITION HAVING A REACTIVE CATALYST

Joseph E. McLaughlin, and George A. Strickland, both of Philadelphia, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 144,299, Apr. 28, 1980. This application Jul. 2, 1981, Ser. No. 280,132
Int. Cl.³ C08L 61/28, 61/24
U.S. Cl. 525—162 5 Claims

1. A thermosetting coating composition comprising a binder of a film forming acrylic polymer or polyester polymer having reactive hydroxyl groups, carboxyl groups or methylol groups and a crosslinking agent selected from the group consisting of melamine formaldehyde resin, alkylated melamine formaldehyde resin, urea formaldehyde resin or benzoguanamine formaldehyde resin and about 0.1–10% by weight, based on the weight of the coating composition, of reactive catalyst which is a solid at 30° C. and comprises a structure selected from the group of



and mixtures thereof;

wherein R is the residue of neodecanol or 2-ethyl 1,3-hexanediol.

4,379,887

ADHESIVE COMPOSITION

Noel M. M. Overbergh, Bertem, Belgium, assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 262,873, May 12, 1981, abandoned. This application Mar. 31, 1982, Ser. No. 364,087
Claims priority, application United Kingdom, May 12, 1980, 8015576
Int. Cl.³ C08L 77/07
U.S. Cl. 525—184 31 Claims

1. An adhesive composition produced by mixing a thermoplastic polyamide having reactive amine groups attached to the polyamide molecule with a vinyl-terminated rubber.

4,379,888

COMPOSITION FOR DRAWN FILM, COLD DRAWN FILM MADE OF SAID COMPOSITION AND PROCESS FOR MANUFACTURE OF SAID FILM

Isao Yoshimura, Fujisawa; Hideo Hata, and Takashi Kaneko, both of Yokohama, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Division of Ser. No. 949,253, Oct. 6, 1978, Pat. No. 4,277,578. This application Dec. 5, 1980, Ser. No. 213,459
Claims priority, application Japan, Oct. 11, 1977, 52/120917; Nov. 22, 1977, 52/139431; May 30, 1978, 53/63870; May 30, 1978, 53/63872
Int. Cl.³ C08L 23/06, 23/08, 23/12, 23/16, 23/20
U.S. Cl. 525—211 37 Claims

1. A cold drawn film having a tensile strength of not less than 5.0 kg/mm² and a haze of not more than 4.0%, which film comprises a homogeneous blend of the specific combination of components, namely the combination of (A)+(B)+(C), wherein

(A) is at least one selected from the group consisting of low-density polyethylene, and low-density polyethylene admixed with copolymers of ethylene with vinyl ester monomers, unsaturated aliphatic monocarboxylic acids and alkyl esters of said monocarboxylic acids which are all copolymerizable with ethylene,

(B) is an elastomer having a density of not more than 0.91 g/cm³ and made of an ethylene-α-olefin copolymer, and

(C) is at least one selected from the group consisting of crystalline polypropylene, high-density polyethylene and crystalline polybutene-1, wherein the components of the composition are in amounts such as to satisfy $0.90 \geqq B/(A+B) \geqq 0.05$ and $0.05 \geqq C/(A+B) \geqq 2.0$ in terms in weight ratio.

4,379,889

PROCESS FOR PRODUCING POLYBUTADIENE RUBBER WITH ENHANCED MECHANICAL STRENGTH

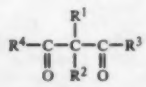
Hidetomo Ashitaka; Kyohei Oizumi, both of Ichihara; Kazuya Jinda, Kisarazu, and Kazutoshi Inaishi, Ichihara, all of Japan, assignors to Ube Industries, Ltd., Chiba, Japan

Filed Dec. 16, 1980, Ser. No. 216,869
Claims priority, application Japan, Dec. 20, 1979, 54-164773
Int. Cl.³ C08F 4/12, 136/06
U.S. Cl. 525—247 17 Claims

1. A process for producing a polybutadiene rubber with enhanced mechanical strength, comprising the two successive steps of:

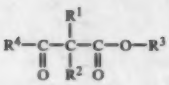
(A) polymerizing a first polymerization mixture comprising 1,3-butadiene and a polymerization medium in the presence of a cis-1,4-polymerization catalyst which comprises:

(1) a cobalt compound selected from the group consisting of cobalt complexes with beta-diketones of the formula (II):



(II)

wherein R^1 and R^2 represent an aliphatic hydrocarbon radical having 1 to 3 carbon atoms, respectively, and R^3 and R^4 represent at least one member selected from the group consisting of a hydrogen atom and an aliphatic hydrocarbon radical having 1 to 3 carbon atoms, respectively; a cobalt complex with β-keto acid esters of formula (III):



(III)

wherein R^1, R^2, R^3 and R^4 are as defined above; cobalt salts of an organic carboxylic acid having 6 or more carbon atoms; and a cobalt halide complex of the formula (IV):

$$CoXnYm \quad (IV)$$

wherein X represents a halogen atom, n represents an integer of 2 or 3, Y represents an organic ligand capable of forming a complex in coordination with the cobalt halide and m represents an integer of from 1 to 4, and

(2) a dialkyl aluminum halide of the formula (I):

$$AlR_2X \quad (I)$$

wherein R represents an alkyl radical having 2 to 8 carbon atoms and X represents a halogen atom, to convert at least a portion of the amount of said 1,3-butadiene to a cis-1,4-polybutadiene; and

(B) polymerizing a second polymerization mixture comprising the resultant cis-1,4-polybutadiene from Step (A), unreacted 1,3-butadiene and a polymerization medium in the presence of a 1,2-polymerization catalyst which comprises:

1. said cobalt compound;
2. said dialkyl aluminum halide;
3. carbon disulfide; and
4. an electron donor organic compound selected from the group consisting of an aliphatic polyether, an aliphatic carboxylic ester, an aliphatic ketone, an aliphatic acetal, an aliphatic N,N-dialkyl amide, an aliphatic dialkyl sulfoxide and a trialkyl phosphate, to convert said cis-1,4-polybutadiene and said 1,3-butadiene to a polybutadiene rubber, whereby the resultant polybutadiene rubber comprises 70% to 95% by weight of a boiling n-hexane-soluble fraction thereof having an intrinsic viscosity of from 1 to 5 determined in toluene at a temperature of 30° C. and containing 95% or more of a cis-1,4-structure, and 5% to 30% by weight of a boiling n-hexane-insoluble fraction having a reduced viscosity of from 0.5 to 5, determined in tetrahydronaphthalene at a temperature of 135° C., and a melting point of 180° C. or more, and containing 85% or more of a 1,2-structure.

4,379,890

WATER-SOLUBLE POLYMERS CARRYING QUATERNARY AMMONIUM GROUPS, THEIR PREPARATION AND USE

Alfred Konietzny, and Wilfried Bartz, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels, Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,796

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1980, 3026300

Int. Cl.³ C08F *8/32*

U.S. Cl. 525—332.8 **12 Claims**

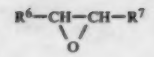
1. A water-soluble polymer having quaternary ammonium groups, prepared by reacting

(a) a low molecular weight alkylating agent with

(b) a corresponding polymer carrying tertiary, quaternizable amino groups,

wherein

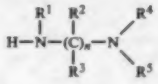
(a) is a low molecular weight oxirane of the formula



wherein R^6 and R^7 each independently is hydrogen or alkyl of 1 or 2 carbon atoms optionally substituted by hydroxy or chloride or R^6 or R^7 together represent a 1,3-propylene or 1,4-butylene chain forming a five- or six-membered ring with the carbon atoms of the oxirane;

(b) is a polymer which is prepared by epoxidizing up to a content of titratable epoxy oxygen of 2–10 weight %, a polymer of 1,3 butadiene monomer having a molecular weight (M_n) of 500–6,000, and prepared from at least 70 mole % of 1,3-butadiene and up to 30 mole % of another copolymerizable 1,3-diolefin or an α-unsaturated monoolefin,

aminating the resultant epoxidation product with a primary-tertiary or secondary-tertiary diamine of the formula



wherein,

R^1 is hydrogen and

n is an integer of 2 to 6,

R^2 and R^3 each independently is hydrogen of alkyl of 1–4 carbon atoms,

represents the same or different chain members, and

R^4 and R^5 each independently is straight chain alkyl of 1–4 carbon atoms optionally substituted by hydroxy or alkoxy of 1–4 carbon atoms, excluding the α-position of the alkyl residue as a point of substitution, or R^4 and R^5 together can form a five- or six-membered ring together with the tertiary nitrogen atom; or

R^1 is alkyl of 1 or 2 carbon atoms, optionally substituted by hydroxy or alkoxy of 1 or 2 carbon atoms, excluding the α-position of the alkyl residue,

n and R^2 through R^5 are as defined above, and

when n is 2 and R^2 and R^3 each is hydrogen, then R^1 and R^4 together with the two nitrogen atoms can also form a six-membered ring,

up to a content of tertiary, quaternizable amino groups of 0.05–0.5 mole/100 g of the amination product, said groups being located in the side chain and linked to a carbon atom stemming either from the primary chain or from a vinyl group of the polymer via 3–7 chain atoms, and

in the quaternization reaction, 0.05–0.5 mole of the tertiary amino groups/100 g of the amination product are quaternized.

4,379,891

MULTIFUNCTIONAL COUPLING AGENT

George R. Haynes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 15, 1981, Ser. No. 274,111

Int. Cl.³ C08F *36/06*

U.S. Cl. 525—342 **10 Claims**

1. A process for the production of a polymer comprising reacting a living lithium-terminated polymer having the formula P-Li wherein P is selected from the group consisting of polymer chains of one or more alkadienes having 4–12 carbon atoms and copolymer chains of one or more alkadienes having

4–12 carbon atoms and one or more monoalkenyl arenes of 8–18 carbon atoms, having the alkenyl radical attached to an arene ring carbon atom, with a coupling agent of the general formula

$$(R_1—O)_3—Si—R_2—O—R_2—Si—(O—R_1)_3$$

wherein R_1 is an alkyl group of 1 to 4 carbon atoms and R_2 is an alkylene group of 2 to 10 carbon atoms.

4,379,892

METHOD FOR PREVENTION OF LOSS OF TRANSPARENCY OF POLYARYLENE ESTER BLENDS

Katsuzi Ueno, Hirakata; Takashi Maruyama, Toyonaka; Haruo Suzuki, Ibaraki, and Teruo Saito, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 46,672, Jun. 8, 1979, abandoned, which is a continuation of Ser. No. 847,911, Nov. 2, 1977, abandoned. This application Apr. 6, 1981, Ser. No. 251,071

Claims priority, application Japan, Nov. 2, 1976, 51-132041

Int. Cl.³ C08L *67/00, 69/00*

U.S. Cl. 525—439 **6 Claims**

1. A polyarylene ester blend consisting essentially of: (a) a polyarylene ester prepared by an interfacial polymerization process comprising mixing an aqueous solution of a bisphenol and an effective catalytic amount of sodium hydroxide with a solution of an aromatic dicarboxylic acid chloride in an organic solvent and vigorously agitating the mixture and (b) a thermoplastic polyester resin, said blend having present a sodium content of less than 70 ppm and being capable of forming a transparent shaped article which can be treated under conditions of high temperature and high moisture without loss of transparency.

4,379,893

SURFACE-TREATED SOFT CONTACT LENSES

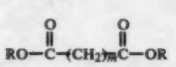
Mary A. O'Malley, Cleveland Heights, and Nancy J. Drake, Painesville, both of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Aug. 26, 1981, Ser. No. 296,379

Int. Cl.³ C08L *39/06*

U.S. Cl. 525—386 **10 Claims**

1. A process for producing a soft contact lens resistant to the diffusion and accumulation therein of substances which promote its clouding and discoloration in use, which process comprises employing a hydrophilic polymer lens shape which is selected from the group consisting of hydroxyethyl methacrylate-N-vinyl pyrrolidone copolymers, hydroxyethyl methacrylate-N-vinyl pyrrolidone-methyl methacrylate terpolymers, and polymerized mixtures of hydroxyethyl methacrylate, amyl methacrylate, vinyl acetate and vinyl propionate, and treating said hydrophilic polymer lens shape with a modifying compound which is a lower alkyl ester of an alkylene dicarboxylic acid having the structural formula:



wherein R can be CH_3 or C_2H_5; and m is an integer of 1–6, inclusive, the treatment being conducted for a sufficient period of time to structurally modify a portion of polymer molecules in the outer surfaces of said hydrophilic polymer lens shape by incorporating therein the modifying compound through its functional groups.

4,379,894

AQUEOUS PROCESS FOR THE QUANTITATIVE CONVERSION OF POLYEPICHLOROHYDRIN TO GLYCIDYL AZIDE POLYMER

Milton B. Frankel, Tarzana; Edward F. Witucki, Van Nuys, and Dean O. Woolery, II, Reseda, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 14, 1981, Ser. No. 330,405

Int. Cl.³ C08G *65/24, 65/32*

U.S. Cl. 525—403 **21 Claims**

1. An aqueous process for the quantitative conversion of polyepichlorohydrin (PECH) to glycidyl azide polymer (GAP), comprises the steps of:

combining said PECH and an ionic azide in a mixture of water and a phase transfer catalyst capable of the quantitative conversion of PECH to GAP;

reacting said PECH and said ionic azide in said aqueous mixture while agitating said mixture at a temperature between about 25° C. and about 100° C., and wherein said aqueous mixture is maintained under a nitrogen purged environment; and

recovering said GAP from said aqueous mixture by separating the aqueous layer from the product layer;

water-washing said product layer to remove any inorganic salts remaining in the product layer;

alcohol-washing said water-washed product layer so as to remove said phase transfer catalyst;

dissolving said alcohol-washed product layer in a low-boiling, non-polar solvent;

purifying said dissolved product layer by passing it through adsorbents capable of removing impurities; and

concentrating said purified product layer so as to remove said low-boiling non-polar solvent.

4,379,895

ACID-CAPPED POLYESTER RESINS

Harlan W. Frerking, Jr., Alliance, and Mellis M. Kelley, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 28, 1982, Ser. No. 343,619

Int. Cl.³ C08F *283/00;* **C08G** *63/76*

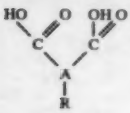
U.S. Cl. 525—437 **18 Claims**

1. A process for preparing an acid capped polyester resin, suitable for use in powdered polyester resins, comprising the steps of:

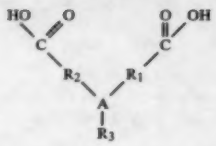
reacting a diester with a diol, said diester selected from the group consisting of an alkyl diester having from 4 to 50 carbon atoms, an alkyl substituted aryl diester having from 10 to 24 carbon atoms, and combinations thereof, said diester optionally containing from about 0.01 percent to about 30 mole percent of a diacid selected from the group consisting of an alkyl dicarboxylic acid having from 2 to 16 carbon atoms, an aryl dicarboxylic acid having from 8 to 16 carbon atoms, an alkyl substituted aryl dicarboxylic acid having from 9 to 16 carbon atoms, a dimer acid having from 34 to 40 carbon atoms, and combinations thereof; said diol having from 2 to 50 carbon atoms; the mole ratio of said diol to said diester and diacid ranging from about 1.20 to about 2.5, and forming the polyester resin having hydroxyl groups thereon;

adding from about 0.01 to 1 mole of an acid for each hydroxyl equivalent in said polyester resin, said acid selected from the group consisting of an alkyl dicarboxylic acid having from 2 to 20 carbon atoms; a dimer acid having from 34 to 40 carbon atoms, an acid of Formula No. 1; an acid of Formula No. 2; and combinations thereof;

FORMULA 1



FORMULA 2



where A is an aromatic compound having from 6 to 18 carbon atoms, where R is an alkyl having from 1 to 18 carbon atoms, or a carboxylic acid group, or hydrogen, where R_1 and R_2 are an alkyl having from 1 to 18 carbon atoms, and where R_3 is an alkyl having from 1 to 18 carbon atoms, or an alkyl carboxylic acid group having from 1 to 18 carbon atoms, or hydrogen, and wherein R_1 and R_2 can be the same or different;

heating and reacting said acid with said polyester resin at a temperature of from about 180° C. to about 280° C. to acid cap said polyester; and

carrying out said reaction until said polyester resin acid number is from about 1 to about 100 and the amount of remaining free acid is less than 20 percent of the added amount.

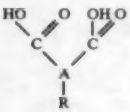
10. An acid capped polyester resin suitable for use as a powdered polyester resin, comprising:

an acid capped polyester resin, said acid capped polyester resin having an acid number of from about 1 to about 100;

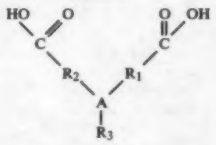
said acid capped polyester resin made by reacting an acid with a polyester having hydroxyl groups thereon;

said acid capped polyester made by adding from about 0.01 to 1 mole of an acid for each hydroxyl equivalent in said polyester resin, said acid selected from the group consisting of an alkyl dicarboxylic acid having from 2 to 20 carbon atoms, a dimer acid having from 34 to 40 carbon atoms, an acid of Formula No. 1, or an acid of Formula No. 2

FORMULA 1



FORMULA 2



where A is an aromatic compound having from 6 to 18 carbon atoms, where R is an alkyl having from 1 to 18 carbon atoms, or a carboxylic acid group, or hydrogen, wherein R_1 and R_2 are an alkyl having from 1 to 18 carbon atoms, and where R_3 is an alkyl having from 1 to 18 carbon atoms, or an alkyl carboxylic acid group having from 1 to 18 carbon atoms, or hydrogen, wherein R_1 and R_2 can be the same or different;

said reaction of said capping acid with said polyester having hydroxyl groups being carried out at a temperature of from about 180° C. to about 280° C. and to an extent such that the amount of remaining free acid is less than 20 percent of the added amount;

said polyester resin made by reacting a diester with a diol, said diester selected from the group consisting of an alkyl diester having from 4 to 50 carbon atoms, an alkyl substituted aryl diester having from 10 to 24 carbon atoms, and combinations thereof, said diester optionally containing from about 0.01 percent to about 30 mole percent of a diacid selected from the group consisting of an alkyl dicarboxylic acid having from 2 to 16 carbon atoms, an aryl dicarboxylic acid having from 8 to 16 carbon atoms, an alkyl substituted aryl dicarboxylic acid having from 9 to 16 carbon atoms, a dimer acid having from about 34 to about 40 carbon atoms, and combinations thereof, said diol having from 2 to 50 carbon atoms; the mole ratio of said diol to said diester and diacid ranging from about 1.20 to about 2.5, and forming a polyester having hydroxyl groups thereon.

4,379,896

KETO/POLYCARBOXY CONTAINING RESIN

Joseph G. Robinson, Winchcombe; David I. Barnes, Cheltenham, and Angela M. Carswell, Longhope, all of England, assignors to Coal Industry (Patents) Limited, England

Division of Ser. No. 174,152, Jul. 31, 1980, Pat. No. 4,346,212.
This application Dec. 23, 1981, Ser. No. 333,886
Claims priority, application United Kingdom, Sep. 21, 1979, 7932778
Int. Cl.³ C08G *2/30*
U.S. Cl. 525—472 **1 Claim**

1. A keto/polycarboxyl containing resin comprising an acid-catalysed phenanthrene-formaldehyde reaction product which has been oxidised to produce keto groups bridging the phenanthrene moieties and carboxyl groups.

4,379,897

COLOR-DEVELOPER FOR PRESSURE-SENSITIVE SHEETS

Makoto Asano; Yoshimitu Tanabe, and Hisamichi Murakami, all of Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Mar. 17, 1981, Ser. No. 244,717
Claims priority, application Japan, Mar. 28, 1980, 55-39098; Mar. 31, 1980, 55-40395
Int. Cl.³ C08G *8/18, 8/24, 8/28*
U.S. Cl. 525—506 **14 Claims**

1. A color-developer for pressure-sensitive recording sheets, said color-developer comprising a polyvalent metal salt of a co-condensate obtained by co-condensing a reaction intermediate of at least one p-substituted phenol with at least one trifunctional or higher phenol selected from phenol, 4,4'-isopropylidene-bisphenol, 4,4'-cyclohexylidene-biphenol and 4,4'-biphenol-sulfon under neutral or acidic conditions, said reaction intermediate being obtained by reacting said p-substituted phenol under alkaline conditions with formaldehyde or a substance capable of generating formaldehyde.

4,379,898

POLYMERIZATION CATALYSTS

Charles M. Selman, and Lawrence M. Fodor, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 55,426, Jul. 6, 1979, Pat. No. 4,276,192.
This application Feb. 10, 1981, Ser. No. 233,267
Int. Cl.³ C08F *4/02, 10/00*
U.S. Cl. 526—124 **11 Claims**

1. A process comprising contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule under polymerization conditions with a catalyst formed by contacting

(a) magnesium metal,

(b) an organic halide of the formula R'X or R''X_2 where X represents a halogen, R' is selected from alkynyl, alkenyl, alkyl, aryl, cycloalkenyl or cycloalkyl radicals and combinations thereof containing from 1 to 12 carbon atoms per molecule and R'' is a saturated divalent aliphatic hydrocarbyl radical having from 2 to about 10 carbon atoms and

(c) a titanium tetrahalide and subjecting same to intensive milling in the presence of

(d) a triaryl phosphite

(e) an anhydrous aluminum trihalide and

(f) magnesium oxide but in the absence of a complexing or extraneous diluent

thereafter activating the thus produced titanium catalyst component by contacting same with

(g) an activator comprising a trialkylaluminum compound, a dialkylaluminum chloride, and a polar organic adjuvant which is an electron donor, said adjuvant further being characterized as a 1 to 4 carbon atom alkyl ester of a substituted or unsubstituted benzoic acid.

4,379,899

PROCESS FOR PRODUCING POLYISOBUTENES

Christopher R. Marsh, Grangemouth, England, assignor to BP Chemicals Limited, London, England

Continuation-in-part of Ser. No. 941,779, Sep. 13, 1978, abandoned. This application Oct. 20, 1981, Ser. No. 312,953

Claims priority, application United Kingdom, Sep. 14, 1977, 38266/77

Int. Cl.³ C08F *4/64, 10/10*

U.S. Cl. 526—144 **1 Claim**

1. A homogeneous polymerization process for producing high molecular weight polyisobutenes of SSU viscosity above 1,000,000 at 210° F. by polymerizing a C_4 feedstock comprising isobutene at a temperature of from −5° to −25° C. in the presence of a catalyst system comprising (i) an alkyl aluminum dichloride or dibromide, (ii) tertiary butyl chloride or bromide, and (iii) a metal halide selected from the group consisting of $SnCl_4$, $SnBr_4$, $TiCl_4$, and $TiBr_4$, and said catalyst concentration based on said alkyl aluminum dichloride or dibromide content thereof is from 20 to 2000 ppm based on the weight of said C_4 feedstock and said catalyst components are present in equimolar proportions.

4,379,900

RAW POLYMER POWDER OF A MODIFIED TETRAFLUOROETHYLENE POLYMER HAVING A HIGH BULK DENSITY AND A GOOD POWDER FLOW INDEX AND ALSO A PROCESS FOR THE MANUFACTURE AND USE THEREOF

Reinhard A. Sulzbach, Burghausen/Salzach, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 4, 1981, Ser. No. 270,489

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021369; Mar. 17, 1981, 3110193

Int. Cl.³ C08F *14/18*

U.S. Cl. 526—247 **18 Claims**

1. In a granular, free-flowing, non-melt-fabricable, non-presintered raw polymer powder of a tetrafluoroethylene polymer, consisting essentially of from 0.004 to 0.075 mole percent polymerized units of a perfluoroalkyl vinyl ether of the formula

$$CF_2{=}CF{-}O{-}R_f$$

wherein R_f is C_2F_5, n-C_3F_7, or n-C_4F_9, and of polymerized tetrafluoroethylene units having a specific surface of from 0.5 to 4.5 m^2/g, the improvement residing in the fact that said powder has an average particle diameter d_{50} of from 450 to 1400 μm, a bulk density of at least 570 g/l, a powder flow index not higher than 5 seconds per 50 grams, and a grain stability not higher than 5.5 seconds per 50 grams.

4,379,901

POLYFLUOROALLYL ETHERS AND THEIR PRODUCTION AND USE

Yoshio Amimoto, Takatsuki, and Masayoshi Tatemoto, Ibaraki, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

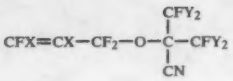
Filed Sep. 28, 1981, Ser. No. 306,352

Claims priority, application Japan, Sep. 30, 1980, 55-136932

Int. Cl.³ C07C *121/34;* C08F *16/24*

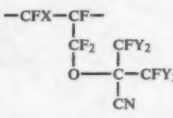
U.S. Cl. 526—247 **21 Claims**

1. A polyfluoroallyl ether of the formula:



wherein each X, which is the same or different, is a chlorine atom or a fluorine atom and wherein each Y, which is the same or different, is a hydrogen atom, a chlorine atom or a fluorine atom.

9. A polymer of a polyfluoroallyl ether comprising units of the formula:



wherein each X, which is the same or different, is a chlorine atom or a fluorine atom and each Y, which is the same or different, is a hydrogen atom, a chlorine atom or a fluorine atom.

4,379,902

PROCESS FOR PRODUCING A LOW VISCOSITY SILICONE RESIN

Duane F. Merrill, Ballston Spa, N.Y., assignor to General Electric, Waterford, N.Y.

Continuation of Ser. No. 126,062, Feb. 29, 1980, which is a continuation of Ser. No. 750,993, Dec. 15, 1976, abandoned, which is a continuation of Ser. No. 630,848, Nov. 10, 1975, Pat. No. 4,026,868. This application Aug. 31, 1981, Ser. No. 298,226

Int. Cl.³ C08G *77/06*

U.S. Cl. 528—18 **12 Claims**

1. A process for providing a molding composition having a low coefficient of thermal expansion during cure, comprising the steps of:

I. first providing a silicone resin having a viscosity which does not exceed 100 centipoise at 140° by

A. adding with continuous agitation a mixture of acetone and organohalosilanes over a period of at least 40 minutes to a heterogeneous hydrolysis mixture having a water phase and an organic phase wherein said organic phase is composed of water, acetone and a water-immiscible solvent where in the final heterogeneous hydrolysis mixture, per part by weight of organohalosilanes there is present:

1. from at least 1.7 parts to about 10 parts of water;
2. from about 0.2 to about 5 parts of acetone;
3. from about 0.3 to about 5 parts of a water-immiscible organic solvent, and
4. from 0 to about one mole of an aliphatic monohydric alcohol having from 1 to 8 carbon atoms per mole of halogen attached to the silicone atom of said organohalosilane;

B. maintaining the temperature of said heterogeneous hydrolysis mixture below 45° C. during Step (A);

C. removing the water from said heterogeneous hydrolysis mixture and reducing the acid content of the organic phase containing a formed silicone resin to below 5 parts per million; and

D. stripping off the solvent at a temperature not to exceed about 120° C. to yield a polyorganosiloxane having an average ratio from about 1 to 1.8 organo radicals per silicon atom;

said organohalosilanes in Step (A) are selected from the class consisting of

a. a mixture of organotrihalosilane and diorganodihalosilane,

b. a reaction product of an aliphatic monohydric alco-

hol having from 1 to 8 carbon atoms and a mixture of organotrihalosilane and diorganodihalosilane which reaction product may have up to one alkoxy radical substituted for each halogen radical in said organotrihalosilane and diorganodihalosilane; and

c. a mixture of the reaction product of (b) and an organohalosilane selected from organotrihalosilane and diorganodihalosilane, and where the organo radicals of said organohalosilanes are selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals;

II. mixing said silicone resin with a filler and a catalyst effective for providing a curable silicone molding composition having a low coefficient of thermal expansion during such cure, wherein said silicone resin comprises 15 to 20 percent by weight of the total molding composition.

4,379,903
PROPELLANT BINDERS CURE CATALYST

Russell Reed, Jr., and May L. Chan, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 1, 1982, Ser. No. 353,773
Int. Cl.³ C08G *18/38*
U.S. Cl. 528—55 **14 Claims**

1. A process for the curing of a glycidyl-azide polymer (GAP)/isocyanate binder system which comprises:

(a) adding a non-gassing catalyst to a mixture comprising glycidyl-azide polymer and isocyanate curative to form said binder system; and

(b) curing said binder system to form a substantially void free grain.

4,379,904
NOVEL POLYURETHANE PRODUCT

Benjamin S. Ehrlich, Cheshire, and Richard W. Oertel, III, Guilford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 348,324, Feb. 12, 1982, abandoned, which is a continuation of Ser. No. 209,862, Nov. 24, 1980, abandoned. This application Apr. 26, 1982, Ser. No. 371,534
Int. Cl.³ C08G *18/48*
U.S. Cl. 528—65 **20 Claims**

1. In a thermoplastic polyurethane elastomer which is the product of reaction of 4,4'-methylenebis(phenyl isocyanate), difunctional extender and a polymeric diol selected from the class consisting of (a) polyoxypropylene-polyoxyethylene copolymers having a molecular weight of from about 1000 to about 3000, and having a minimum content of ethylene oxide (E.O.) residues by weight for any given molecular weight (MW) corresponding to:

$$\% \text{ E.O.} = \left[\left(\frac{MW - 900}{4}\right) \times 3\right] \times \left[\frac{100}{MW}\right].$$

(b) polyester diols having a molecular weight of from about 1000 to about 4000, and mixtures of (a) and (b), the equivalent proportions of polymeric diol to extender being within the range of about 1:2 to about 1:20 and the ratio of equivalents of said isocyanate to total hydroxyl equivalents being within the range of about 0.99:1 to 1.06:1, the improvement which comprises replacing at least about 15 percent by weight of said polymeric diol by a replacement polyol selected from the class consisting of:

(i) polyoxypropylene-polyoxyethylene glycols having a molecular weight of about 3500 to about 4500 and an ethylene oxide content of about 10 to about 60 percent by weight;

(ii) polyoxypropylene-polyoxyethylene triols having a molecular weight from about 5000 to about 7000 and an ethylene oxide content of about 10 to about 40 percent by weight; and

(iii) mixtures of (i) and (ii).

4,379,905
PROCESS FOR THE PREPARATION OF POLYISOCYANATES CONTAINING ISOCYANURATE GROUPS AND THEIR USE IN THE PRODUCTION OF POLYURETHANES

Ingo Stemmler; Hanns P. Müller, both of Odenthal, and Kuno Wagner, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 6, 1982, Ser. No. 337,344
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1981, 3100263
Int. Cl.³ C08G *18/77*
U.S. Cl. 528—73 **12 Claims**

1. A process for the preparation of polyisocyanates containing isocyanurate groups which comprises trimerizing a proportion of the isocyanate groups of organic polyisocyanates or mixtures of polyisocyanates and monoisocyanates in the presence of basic alkali metal compounds as catalysts and stopping the trimerization reaction by the addition of a catalyst poison, characterized in that the trimerization catalyst is a complex of

(i) a basic alkali metal compound and

(ii) an acyclic organic compound which

(a) has at least 6 alkylene oxide units of the formula —R—O, wherein R represents C_1–C_4 alkylene, in the form of one or more polyether chains with only those chains having at least 3 alkylene oxide units being counted to reach the total of at least 6 alkylene oxide units

(b) contains a total of at least about 40% by weight of alkylene oxide units, the alkylene oxide units of any chains containing less than three of these units not being counted as alkylene oxide units, and

(c) has a molecular weight of at least 282.

4,379,906
HIGH SOLIDS URETHANE COATINGS PREPARED FROM A POLYLISOCYANATE AND A POLYHYDROXY OLIGMER

Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1981, Ser. No. 334,802
Int. Cl.³ C08G *18/42*
U.S. Cl. 528—75 **39 Claims**

1. A thermosetting coating composition adapted for low temperature bake applications comprising:

(A) a polyhydroxy oligomer having a number average (M_n) molecular weight of between about 300–2000 and comprising the reaction product of:

(i) an acid ester made by reacting:

(a) a C_3–C_{10} aliphatic branched diol, and

(b) an alkyl hexahydrophthalic anhydride,

wherein (a) and (b) are combined in the reaction mixture in amounts sufficient to result in reaction in a molar ratio of greater than 1:1 up to 1:2; and

(ii) a monoepoxide C_2–C_{10} monomer, wherein said monomer is included in an amount sufficient to provide reaction of about 1.0 epoxide group for each acid group of said acid ester;

(B) a polyisocyanate crosslinking agent; and

(C) 0–50 weight percent based on the total weight of (A), (B) and (C) of a hydroxy functional additive having a number average molecular weight (Mn) of between about 150–6000, said polyisocyanate crosslinking agent having two or more reactive isocyanate groups per molecular weight and being included in said composition in an amount sufficient to provide between about 0.50 and about 1.6 reactive isocyanate groups per hydroxyl group present in said

composition either on said polyhydroxy oligomer or as a hydroxyl group of said hydroxy functional additive.

4,379,907

Patent Not Issued For This Number

4,379,908

RAPID CURING EPOXY-UNSATURATED MONOMER COMPOSITIONS

Thomas F. Brownscombe, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 5, 1982, Ser. No. 355,082

Int. Cl.³ C08G *59/68, 59/40, 65/02*

U.S. Cl. 528—91 **8 Claims**

1. A curable composition comprising (1) at least one epoxy compound containing at least one vicinal epoxy group, (2) a miscible amount of at least one ethylenically unsaturated monomer and (3) a curing amount of at least one metal salt selected from the group consisting of lithium and Group II metal salts of a non-nucleophilic acid.

4,379,909

COATING COMPOSITIONS

Hans R. Falkenburg, Haan; Siegfried Krause, Mettmann, and Robert C. McGuiness, Erkrath, all of Fed. Rep. of Germany, assignors to Hermann Wiederhold GmbH Corp., Hilden, Fed. Rep. of Germany and Imperial Chemical Industries PLC, London, England

Filed Oct. 26, 1981, Ser. No. 315,266

Claims priority, application United Kingdom, Oct. 27, 1980, 8034533

Int. Cl.³ C08G *59/68, 59/42*

U.S. Cl. 528—94 **6 Claims**

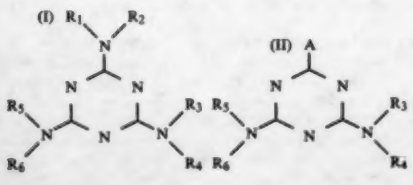
1. A coating lacquer, which on heating (and with savings in energy) yields a non-toxic cured coating on a metal substrate, comprising the components:

(i) an epoxide resin

(ii) a curing agent selected from polycarboxylic acids or polycarboxylic acid anhydrides

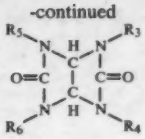
(iii) an organic solvent, and

(iv) an accelerator for the curing reaction between the epoxide resin and the curing agent characterised in that the accelerator is selected from materials of chemical structures, or has moieties derived from chemical structures:



or (III)

-continued



wherein

R_1, R_2, R_3, R_4, R_5, R_6 are H, C_{1-8} alkyl or substituted alkyl, the same or different, and A = H, C_{1-8} alkyl, aryl or substituted alkyl/aryl; and further characterised in that there is present not more than 10% by weight of the accelerator based on the total weight of reactant solids.

4,379,910

FLAME RETARDANT AROMATIC POLYCARBONATE COMPOSITIONS MADE FROM FLUORINATED DIPHENOLS

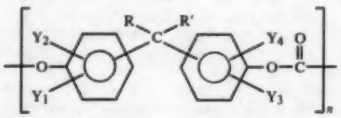
Victor Mark, Evansville, and Charles V. Hedges, Mount Vernon, both of Ind., assignors to General Electric Co., Mt. Vernon, Ind.

Filed Dec. 31, 1980, Ser. No. 221,460

Int. Cl.³ C08G *63/62*

U.S. Cl. 528—202 **28 Claims**

1. A high-molecular weight aromatic polycarbonate having improved flame-retardance, said polycarbonate having the general formula:



wherein n is an integer from 5 to 1,000; R is a radical selected from the group consisting of a fluorinated alkyl radical having from three to about twenty-two carbon atoms and a fluorinated aryl radical; R′ is selected from the group consisting of fluorinated alkyl radical, fluorinated aryl radical, alkyl radical and hydrogen; and Y_1, Y_2, Y_3 and Y_4 are each independently selected from the group consisting of hydrogen, alkyl radical, chlorine and bromine.

4,379,911

CROSS-LINKING AGENTS FOR CATIONIC POLYMERS

Girish G. Parekh, Fairfield; Werner J. Blank, Wilton, and Peter J. Schirmann, Fairfield, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 232,454, Feb. 9, 1981, abandoned, which is a continuation of Ser. No. 128,612, Mar. 10, 1980, abandoned, which is a division of Ser. No. 32,982, Apr. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 926,762, Jul. 21, 1978, abandoned. This application Jul. 29, 1982, Ser. No. 403,202

Int. Cl.³ C08G *12/32*

U.S. Cl. 528—245 **2 Claims**

1. A cross-linking agent for compounds containing an average of at least two primary or secondary amine groups per molecule, comprising a melamine compound, the amine groups of which contain as substituents an average of at least two glyoxylic acid ester groups per molecule.

4,379,912

METHOD OF MAKING POLYESTER PREPOLYMERS

Chen-i Lu, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 12, 1982, Ser. No. 407,401
Int. Cl.³ C08G 63/22
U.S. Cl. 528—274 19 Claims

1. In a method for preparing a prepolymer composed of constituents of a dicarboxylic acid and a glycol, which method comprises:

(a) reacting said dicarboxylic acid and said glycol in the presence of a transesterification catalyst at a reaction temperature and pressure effective to form a reaction mixture containing condensation oligomers, reaction by-products and residual dicarboxylic acid, glycol and catalyst; and

(b) subjecting said reaction mixture to a temperature and pressure effective to polycondense substantially all of said oligomers to form a molten prepolymer,

the improvement which comprises purifying said reaction mixture prior to said polycondensation step (b) to remove substantially all of said reaction by-products and said residual dicarboxylic acid, glycol and catalyst and to crystallize said condensation oligomers, whereby said prepolymer has increased reactivity when subjected to polymerization.

4,379,913

COMPOSITIONS USEFUL AS INTERNAL ANTISTATIC ADDITIVES FOR POLYMERIC STRUCTURES

Calvin J. Waitkus, Bridgewater, N.J., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed May 4, 1982, Ser. No. 374,670
Int. Cl.³ C08G 63/66
U.S. Cl. 528—300 12 Claims

1. An internal antistatic additive composition for polymeric structures which is a branched configuration polyol first alkoxylated with a mixture of ethylene oxide and propylene oxide and then reacted with a difunctional reactant to produce a chain extended random alkoxylated polyol.

9. A polymeric structure containing an effective amount of the composition of claim 1 sufficient to improve antistatic properties of the structure.

12. The polymeric structure of claim 9 wherein the structure is a polyester.

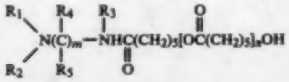
4,379,914

POLYCAPROLACTONE POLYMERS

Robert D. Lundberg, Bridgewater, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 21, 1981, Ser. No. 332,813
Int. Cl.³ C08G 63/08, 63/10
U.S. Cl. 528—354 6 Claims

1. A polycaprolactone polymer having the formula:



wherein R_1 or R_2 is an alkyl, cycloalkyl or aryl group, R_3, R_4 and R_5 is a hydrogen or alkyl, cycloalkyl, or aryl group, and m equals 1 to 20 and n equals 1 to about 500.

4,379,915

LACTONE POLYMER

Shoji Watanabe; Takuya Miho, and Tatsumi Fujii, all of Ohtake, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Feb. 23, 1982, Ser. No. 352,607
Claims priority, application Japan, Feb. 27, 1981, 56-28182
Int. Cl.³ C08G 63/10
U.S. Cl. 528—357 2 Claims

1. A lactone polymer having a narrow molecular weight distribution, which is characterized in that the ratio of the weight average molecular weight to the number average molecular weight is in the range of from 1.1 to 2.0 and the molecular weight is 500 to 5,000.

2. A process for the preparation of lactone polymers, which is characterized in that lactone is subjected to ring-opening polymerization in the presence of 0.1 to 50 ppm of a stannous halide such as stannous chloride, stannous bromide or stannous iodide to form a lactone polymer in which the ratio of the weight average molecular weight to the number average molecular weight is in the range of from 1.1 to 2.0 and the molecular weight is 500 to 5,000.

4,379,916

METHOD FOR COPRECIPITATING WIRE COATING ENAMEL COMPOSITION

Ralph G. Flowers, Pittsfield, Mass., assignor to General Electric Company

Filed Jun. 1, 1981, Ser. No. 269,338
Int. Cl.³ C08L 61/04; B32B 15/02; C08L 61/00
U.S. Cl. 528—494 12 Claims

1. Method for preparing a wire coating enamel consisting of a homogeneous mixture of phenolaldehyde, polyvinyl acetal and epoxy resins, said method comprising the steps of:

dissolving the resin mixture in a water soluble, organic solvent to form a solution;

mixing said solution in a volume of water greater than the volume of the solution to precipitate out said resins as a homogeneous mixture; and

separating said precipitated resin mixture from said water and solvent mixture.

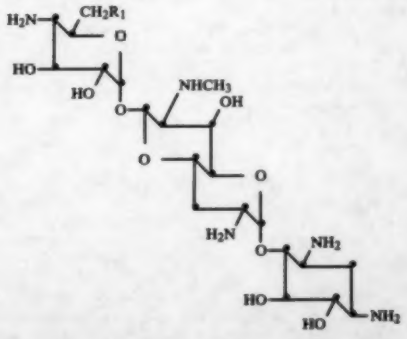
4,379,917

6''-(SUBSTITUTED)-APRAMYCIN ANTIBIOTIC DERIVATIVES AND INTERMEDIATES AND STARTING MATERIALS THEREFOR

Herbert A. Kirst, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 24, 1981, Ser. No. 334,409
Int. Cl.³ C07H 15/22
U.S. Cl. 536—16.8 39 Claims

1. A compound of the formula



wherein R_1 is hydrogen, C_1 to C_3-alkylsulfonyloxy, phenylsulfonyloxy, substituted phenylsulfonyloxy, tert-butyldimethylsilyloxy, fluoro, chloro, bromo, iodo, azido, amino, C_1 to C_3-alkylthio, phenylthio, cyano or aminomethyl;

and the pharmaceutically acceptable acid addition salts thereof.

4,379,918

PROCESS FOR PREPARING WATER-SOLUBLE PHOSPHONOMETHYL ETHERS OF CELLULOSE

Lothar Brandt, and Arno Holst, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 20, 1981, Ser. No. 313,350

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039978

Int. Cl.³ C08B *11/00*; C08L *1/26*

U.S. Cl. 536—62 **17 Claims**

1. A process for preparing water-soluble phosphonomethyl ethers of cellulose, comprising the steps of:

reacting cellulose or a cellulose derivative wiith halogenomethane phosphonic acid or a salt thereof or an acid derivative thereof which provides halogenomethane phosphonate ions, said reaction being carried out in an aqueous alkaline medium containing hydroxide ions, wherein

from about 2.1 to 15 moles of hydroxide ions, and

from about 0.4 to 3 moles of halogenomethane phosphonate ions per mole of cellulose are reacted in about 3 to 50 parts by weight, per part by weight of the cellulose, of a mixture comprising an inert organic solvent and from about 2 to 60 percent by weight of water; and continuing the reaction until the phosphonomethyl cellulose has a DS of at least about 0.13.

4,379,919

STARCH SULFOMALEATE HALF-ESTERS, A METHOD FOR THEIR PREPARATION AND THEIR USE TO PREPARE STARCH DISULFOSUCCINATE HALF-ESTERS

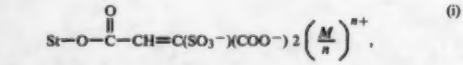
Martin M. Tessler, Edison; Otto B. Wurzburg, Whitehouse Station, and Teresa A. Dirscherl, Netcong, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Apr. 1, 1982, Ser. No. 364,376

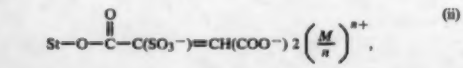
Int. Cl.³ C08B *31/04, 31/16*

U.S. Cl. 536—108 **14 Claims**

1. A starch derivative, comprising a starch sulfomaleate of the general structure:



(i)



(ii)

or mixtures of (i) and (ii); wherein St—O— represents a starch molecule or a modified starch molecule, M is a cation, and n is the valence number of M.

4,379,920

CEPHALOSPORINS

David Brown, Hayes; Anthony F. Giles, Maidenhead; Howard W. Cramer, Berkhamsted; H. Mary Noble, Burnham; Louis J. Nisbet, Bourne End; Michael E. Bushell, Farnham; Glenis Weare, Tylers Green, and Ian Y. Caldwell, Uxbridge, all of England, assignors to Glaxo Group Limited, England

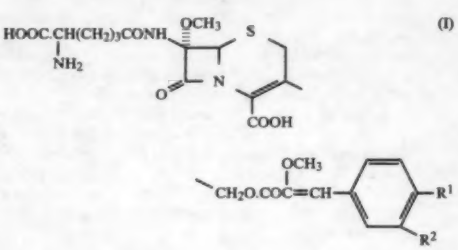
Filed Oct. 14, 1980, Ser. No. 196,525

Claims priority, application United Kingdom, Oct. 31, 1979, 7937737; May 21, 1980, 8016798

Int. Cl.³ C07D *501/57*; A61K *31/545*

U.S. Cl. 542—427 **3 Claims**

1. A compound of the formula (I)



(I)

wherein R^1 represents a hydroxyl or sulphooxy group R^2 represents a sulphooxy group, or a salt, ester, N-protected derivative or solvate thereof.

4,379,921

PRODUCTION OF TRIAZOLYLVINYL KETONES

Yuji Funaki, Toyonaka; Shizuya Tanaka, Minoo, and Noritada Matsuo, Itami, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

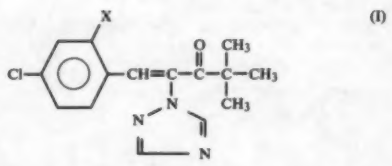
Filed Aug. 13, 1981, Ser. No. 292,631

Claims priority, application Japan, Aug. 21, 1980, 55-115682; Aug. 21, 1980, 55-115683; Aug. 22, 1980, 55-116176; Aug. 25, 1980, 55-117184; Aug. 25, 1980, 55-117186

Int. Cl.³ C07D *249/08*

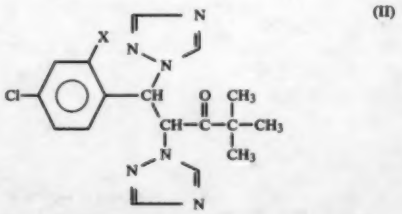
U.S. Cl. 542—458 **21 Claims**

1. A process for producing a compound of the formula:



(I)

wherein X is a hydrogen or chlorine atom, which comprises heating a compound of the formula:



(II)

wherein X is as defined above.

4,379,922
CEPHAM COMPOUNDS

Ikuo Ueda, Toyonaka; Takao Takaya, Kawanishi; Masakazu Kobayashi, Ikeda; Takashi Masugi, Kitamachi; Hisashi Takasugi, Kohamanishi; Hiromu Kochi, Sakai, and Tadashi Kitaguchi, Kukuchinishimachi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

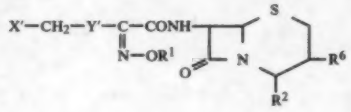
Division of Ser. No. 101,527, Dec. 10, 1979, Pat. No. 4,298,529, which is a continuation-in-part of Ser. No. 73,565, Sep. 7, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,217

Claims priority, application Japan, Sep. 12, 1978, 53-112555; United Kingdom, Sep. 12, 1978, 36564/78; Japan, Jan. 12, 1979, 54-3106; United Kingdom, Feb. 19, 1979, 7905791; European Pat. Off, Sep. 11, 1979, 79103389.7; Japan, Sep. 11, 1979, 54-117166

Int. Cl.³ C07D *501/14*

U.S. Cl. 544—16 **4 Claims**

1. A new compound of the formula:



wherein

R^1 is an aliphatic hydrocarbon group which may have suitable substituents,

R^2 is carboxy or a protected carboxy group,

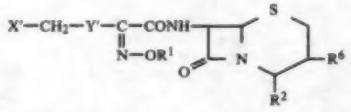
R^6 is hydroxy, lower alkanoyloxy, lower alkoxycarbonyloxy, lower alkanesulfonyloxy, arenesulfonyloxy, aroyloxy, ar(lower)alkanoyloxy, ar(lower)alkoxycarbonyloxy, or methylene,

X′ is hydrogen or halogen, and

Y′ is carbonyl or a protected carbonyl group,

or its salt.

2. A new compound of the formula:



wherein

R^1 is lower alkyl,

R^2 is carboxy,

R^6 is hydroxy, lower alkanoyloxy or methylene,

X′ is hydrogen or halogen, and

Y′ is carbonyl, lower alkylenedioxymethylene, di(lower)alkoxymethylene or lower alkoxycarbonylhydrazonomethylene,

or its salt.

4,379,923
PREPARATION OF 7-ACYLAMINO-3-(THIO-SUBSTITUTED)-METHYL 3-CEPHEM-4-CARBOXYLIC ACID-1-OXIDE DERIVATIVES

Cornelis A. Bruynes, Koudekerk, and Theodorus K. Jurriens, Delft, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

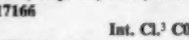
Filed Aug. 28, 1981, Ser. No. 297,214

Claims priority, application Netherlands, Sep. 5, 1980, 8005041

Int. Cl.³ C07D *501/04*

U.S. Cl. 544—26 **6 Claims**

1. A process for the preparation of 7-acylamino-3-(thiosubstituted)-methyl-3-cephem-4-carboxylic acid-1-oxide derivatives comprising reacting a 7-acylamino-3-bromomethyl-3-cephem-4-carboxylic acid-1-oxide derivative with a silylated thiol of the formula



wherein R is a 5- or 6-membered heterocyclic group having at least one nitrogen or sulfur atom as the heteroatoms to obtain the corresponding 7-acylamino-3-(R-thiomethyl)-3-cephem-4-carboxylic acid-1-oxide derivative.

4,379,924
CEPHALOSPORIN DERIVATIVES

Mitsuo Numata, Takatsuki; Isao Mimamida, Kyoto; Masayoshi Yamaoka, Osaka; Mitsura Shiraishi, Suita, and Toshio Miyawaki, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

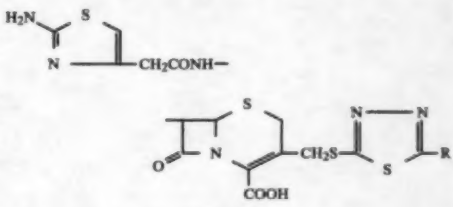
Division of Ser. No. 534,782, Dec. 20, 1974, Pat. No. 4,080,498. This application Dec. 23, 1977, Ser. No. 863,719

Claims priority, application Japan, Dec. 25, 1973, 48-1521; Feb. 20, 1974, 49-20752; Apr. 15, 1974, 49-42574; Jul. 17, 1974, 49-82623; Nov. 13, 1974, 49-131381

Int. Cl.³ C07D *501/36*; A61K *31/545*

U.S. Cl. 544—27 **20 Claims**

1. A compound of the formula:



wherein R represents hydrogen, a C_{1-12} alkyl, trifluoromethyl, amino, mercapto, carboxymethyl, carbamoylmethyl, N-C_{1-12} alkylcarbamoylmethyl, C_{1-12} alkoxycarbonylmethyl, methylthiomethyl, methylsulfonylmethyl, N-C_{1-12} alkylamino-C_{1-12} alkyl, morpholinomethyl, sulfo-C_{1-12} alkylamine, hydroxy-C_{1-12} alkylamino, C_{1-12} alkylamino-C_{1-12} alkylamino, C_{1-12} alkoxycarbonylamino, 2-hydroxyethylthio, 2-C_{1-12} acyloxyethylthio, carboxymethylthio, C_{1-12} alkoxycarbonylmethylthio, carbamoylmethylthio, N-C_{1-12} alkylcarbamoylmethylthio, acetylmethylthio, N-C_{1-12} alkylamino-C_{1-12}-alkylthio, morpholinocarbonylmethylthio or 2-sulfoethylthio, or a pharmaceutically acceptable salt thereof.

4,379,925
LIQUID PHASE AMMOXIDATION OF CYCLOHEXANONE AND/OR CYCLOHEXANOL

Robert K. Grasselli, Chagrin Falls; Dev D. Suresh, Macedonia, both of Ohio, and David R. Bridgeman, Wilmington, Del., assignors to The Standard Oil Co., Cleveland, Ohio

Continuation of Ser. No. 918,975, Jun. 26, 1978, abandoned. This application Oct. 6, 1980, Ser. No. 194,638

Int. Cl.³ C07D *265/38, 241/46, 319/24*

U.S. Cl. 544—102 **2 Claims**

1. A liquid phase ammoxidation process comprising contacting a reactant comprising a mononuclear cycloaliphatic ketone or alcohol, the cycloaliphatic moiety of said ketone or alcohol having the formula C_nH_{2n} wherein n is 5 or 6, said cycloaliphatic ketone or alcohol being unsubstituted or substituted with at least one member selected from the group consisting of alkyl having 1 to 4 carbon atoms, phenyl, benzyl, tolyl, xylyl, said reactant containing 5 to 18 carbon atoms, in the liquid phase with molecular oxygen, ammonia and a molybdate catalyst of the following general formula:

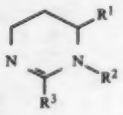
wherein
A is alkali metal, Tl, Sm or mixtures thereof;
B is Ni, Co, Mn, Mg, other alkaline earths and Group IIB elements:
C is Fe, Cr, Ce or mixtures thereof;
F is Ge, Sn, Al, Ag, Au, Pb, Group VIII elements other than Ni, Co and Fe, V, Tl, In, Ta, rare earth metals or mixtures thereof; and
wherein
a is 0–4;
b is 0–20;
c is 0–20;
d is greater than 0–20;
e is greater than 0–5;
f is 0–10;
g is 6 to 18; and
x is a number determined by the valence requirements of the other elements present.

4,379,926
1,4,5,6-TETRAHYDROPYRIMIDINE DERIVATIVES

Jean A. Gauthier, and Ivo Jirkovsky, both of Montreal, Canada, assignors to Ayerst, McKenna & Harrison Ltd., Montreal, Canada

Filed May 8, 1978, Ser. No. 904,124
Int. Cl.³ C07D *413/06, 239/06;* A61K *31/505, 31/535*
U.S. Cl. 544—122 **12 Claims**

1. A compound of formula I



(I)

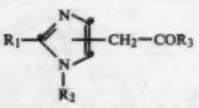
in which R^1 and R^2 are phenyl and R^3 is lower alkyl, phenyl, 2-furyl, 3-pyridinyl, 2-thienyl, di(lower alkyl)amino or a radical of formula R^4—A wherein A is lower alkylene and R^4 is 1-piperidinyl or 4-morpholinyl; or a therapeutically acceptable acid addition salt thereof.

4,379,927
PROCESS FOR THE PREPARATION OF IMIDAZOLEACETIC ACID DERIVATIVES

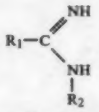
Helmut Vorbrüggen, and Norbert Schwarz, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 349,416
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, 3106150
Int. Cl.³ C07D *413/06, 233/64*
U.S. Cl. 544—139 **5 Claims**

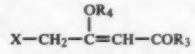
1. A process for preparing an imidazoleacetic acid derivative of the formula



wherein
R_1 is hydrogen; C_{1-24}-alkyl; C_{5-7}-cycloalkyl; C_{7-14}-aralkyl; C_{6-14}-aryl; a C_{6-10}-aromatic, mono- or bi-cyclic heterocycle of 5–10 total ring atoms, 1–3 being O, N or S atoms, the remainder being C-atoms; substituted C_{6-14}-aryl or said aromatic heterocycle each substituted by 1–3 halogen atoms, up to three C_{1-4}-alkyl groups, a nitro group, up to three C_{1-4}-alkoxy groups, a C_{1-4}-alkoxycarbonyl group or CF_3; amino; or amino substituted by C_{1-24}-alkyl, C_{5-7} cycloalkyl, C_{7-14}-aralkyl or C_{6-14} aryl;
R_2, independently, is hydrogen, alkyl, cycloalkyl, aralkyl, aryl, or a heterocyclic group, all as defined above for R_1; or
R_1 and R_2 together are C_{4-7} alkylene forming a ring with their connecting C–N bond; and
R_3 is C_{1-10}-alkoxy, C_{7-14}-aralkoxy, amino, mono or di-C_{1-4}-alkylamino, pyrrolidino, piperidino, morpholino, arylamino, heteroarylamino, or substituted arylamino or substituted heteroarylamino, each of which is substituted in the aryl portion as recited above for R_1;
comprising reacting a corresponding amidine or guanidine of the formula



or a reaction compatible acid addition salt thereof
wherein
R_1 and R_2 are as defined above with an acetoacetic acid derivative of the formula



wherein
R_3 is as defined above and
X is fluorine, chlorine, bromine, or iodine, and
R_4 is tri-C_{1-4}-alkyl or tri-C_{7-10}-aralkylsilyl, C_{1-4}-alkyl, or C_{7-10}-aralkyl

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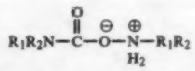
4,379,928
SYNTHESIS OF AMIDES

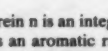
Spyros Theodoropulos, Yorktown Heights, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 4, 1981, Ser. No. 240,327
Int. Cl.³ C07C *102/00, 102/04, 102/06*
U.S. Cl. 544—176 **19 Claims**

1. Method of preparing dialkyl amides which comprises contacting an organic compound containing at least one carboxyl, carboxylic acid ester or carboxylic acid anhydride functionality with an amide carbamic acid salt having the formula:



wherein each of R_1 and R_2 is a monovalent radical selected from the group consisting of —H, alkyl having 1 to about 20 carbon atoms including linear, branched and cyclic alkyls, aralkyl groups having the formula:



wherein n is an integer having values of 1 to about 5 inclusive, Ar is an aromatic radical having up to about 15 carbons and optionally 1 hetero atom and the grouping $—NR_1R_2$ is a monovalent radical selected from the class consisting of piperazine, piperidine, morpholine, or pyrrole radicals, at a temperature of about 25°–250° C. until an amide is formed.

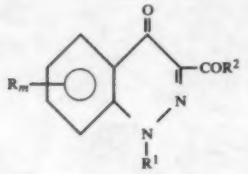
19. Method claimed in claim 1 wherein the amine carbamic acid salt is formed in situ by reacting carbon dioxide with primary or secondary amine.

4,379,929
4(1H)-OXOCINNOLINE-3-CARBOXYLIC ACID DERIVATIVES

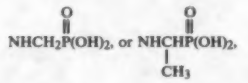
Robert A. Conrad, Indianapolis, and William A. White, Fountaintown, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 19, 1981, Ser. No. 245,564
Int. Cl.³ C07D *237/28, 491/04, 9/65*; A61K *31/495*
U.S. Cl. 544—234 **12 Claims**

1. Compound of the formula



wherein
R represents methylenedioxy, or nitro;
m = 1;
R^1 represents C_1–C_3 alkyl, n-butyl, or allyl;
R^2 represents hydroxy C_2–C_4 alkoxy, $NHCH_2CH_2OH$, $NHCH_2CH_2SH$, $NHCH_2COOH$, $NHCH_2CH_2NH_2$,



subject to the limitation that when R represents nitro, R^2 represents $NHCH_2CH_2SH$;
and wherein the position of R on the cinnoline ring is as follows:
1. when R represents methylenedioxy, R is at the 6,7-position of the cinnoline ring, or
2. when R represents nitro, R is at the 7-position of the cinnoline ring.

4,379,930
PREPARATION OF 2-T-BUTYL-5-HYDROXYPYRIMIDINE

Richard G. Pews, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 14, 1981, Ser. No. 301,686
Int. Cl.³ C07D *239/36*
U.S. Cl. 544—298 **4 Claims**

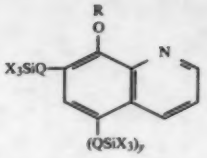
1. A method of making 2-t-butyl-5-hydroxypyrimidine which comprises hydrolyzing a 2-t-butyl-5-halopyrimidine in the presence of an alkali metal methoxide and a catalyst comprising 2-picoline-n-oxide, di-n-butyldisulfide or elemental sulfur.

4,379,931
METAL EXTRACTION FROM SOLUTION AND NOVEL COMPOUNDS USED THEREFOR

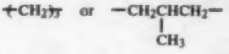
Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jul. 1, 1981, Ser. No. 279,388
Int. Cl.³ C07D *215/12*; C07F *7/10*
U.S. Cl. 546—14 **13 Claims**

1. A compound of the formula



wherein
X is an alkoxy radical containing 1–4 carbon atoms;
Q is a



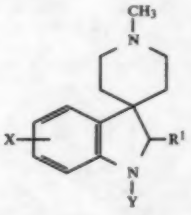
radical;
y has a value of 0 or 1;
R is hydrogen or an R'_3Si— radical wherein R′ is CH_3— or CH_3CH_2—.

4,379,932
PROCESS FOR PREPARING SPIRO[INDOLINE-3,4′-PIPERIDINE]S

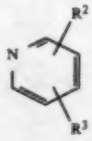
Helen H. Ong, Whippany, N.J., and James A. Profitt, Goshen, Ind., assignors to American Hoechst Corporation, Bridgewater, N.J.

Division of Ser. No. 121,824, Feb. 15, 1980, Pat. No. 4,307,235, which is a continuation-in-part of Ser. No. 936,185, Aug. 23, 1978, Pat. No. 4,209,625, which is a continuation-in-part of Ser. No. 789,723, Apr. 21, 1977, abandoned. This application Dec. 18, 1981, Ser. No. 332,174
Int. Cl.³ C07D *471/10*
U.S. Cl. 546—17 **3 Claims**

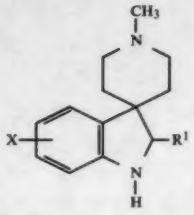
1. A method for preparing a compound of the formula



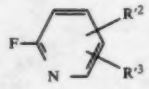
or a physiologically acceptable salt thereof in which
Y is



R^1 is hydrogen or loweralkyl; R^2 and R^3 are the same or different and each can be hydrogen, halogen, trifluoromethyl, loweralkyl, loweralkoxy, hydroxy, nitro, amino, loweralkylamino, formamido, acetamido or loweralkoxycarbonylamino; X is hydrogen, halogen, loweralkyl, loweralkoxy or hydroxy, which comprises treating a 1′-methylspiro[indoline-3,4′-piperidine] of the formula



in which X and R^1 are as defined above with a fluoropyridine of the formula



in which $R^{2'}$ and $R^{3'}$ are the same or different and each can be hydrogen, halogen, trifluoromethyl, loweralkyl, loweralkoxy or nitro in the presence of a solvent and a base.

4,379,933

PROCESS FOR PREPARING SPIRO[INDOLINE-3,4'-PIPERIDINE]S

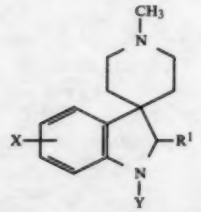
Helen H. Ong, Whippany, N.J., and James A. Profitt, Goshen, Ind., assignors to American Hoechst Corporation, Bridgewater, N.J.

Division of Ser. No. 121,824, Feb. 15, 1980, Pat. No. 4,307,235, which is a continuation-in-part of Ser. No. 936,185, Aug. 23, 1978, Pat. No. 4,209,625, which is a continuation-in-part of Ser. No. 789,723, Apr. 21, 1977, abandoned. This application Dec. 18, 1981, Ser. No. 332,175

Int. Cl.³ C07D *471/10*

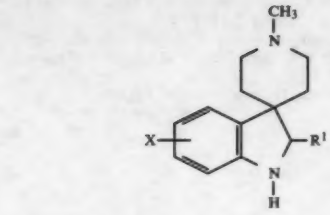
U.S. Cl. 546—17 **3 Claims**

1. A method for preparing a compound of the formula

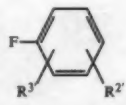


or a physiologically acceptable salt thereof in which Y is

R^1 is hydrogen or loweralkyl; R^2 and R^3 are the same or different and each can be hydrogen, halogen, trifluoromethyl, loweralkyl, loweralkoxy, hydroxy, nitro, amino, formamido or acetamido; X is hydrogen, halogen, loweralkyl, loweralkoxy or hydroxy, which comprises treating a 1'-methylspiro[indoline-3,4'-piperidine] of the formula



in which X and R^1 are as defined above with a fluorophenyl of the formula



in which $R^{2'}$ and $R^{3'}$ are the same or different and each can be hydrogen, halogen, trifluoromethyl, loweralkyl, loweralkoxy or nitro in the presence of a solvent and a base.

4,379,934

PROCESS FOR TWO-DIMENSIONALLY CONCENTRATING LIGHT, AND NOVEL PERYLENE-3,4,9,10-TETRACARBOXYLIC ACID DIIMIDES

Fritz Graser, and Guenther Seybold, both of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

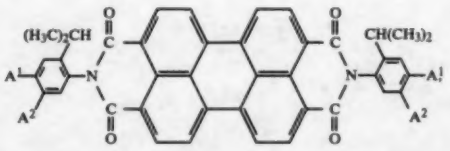
Filed Dec. 8, 1980, Ser. No. 214,228

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1980, 3001857; Jan. 19, 1980, 3001858

Int. Cl.³ C07D *471/06*; C09B *3/14*

U.S. Cl. 546—37 **3 Claims**

1. A perylene-3,4,9,10-tetracarboxylic acid diimide dye of the formula



where A^1 and A^2 are hydrogen or A^1 is isopropyl and A^2 is hydrogen or A^2 is isopropyl and A^1 is hydrogen.

4,379,935

PROCESS FOR THE SYNTHESIS OF VINCAMINE AND RELATED INDOLE ALKALOIDS

Silvano Paracchini, Codogno Milano, Italy, and Paolo C. Mora, Via Scalabrini 49, Piacenza, Italy, assignors to Paolo Corvi Mora, Piacenza, Italy

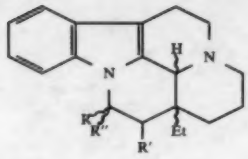
Filed Jul. 30, 1981, Ser. No. 288,419

Claims priority, application Italy, Aug. 4, 1980, 23904 A/80

Int. Cl.³ C07D *461/00, 455/00*

U.S. Cl. 546—51 **6 Claims**

1. A process for the preparation of vincamine and related indole alkoloids of the formula (I)



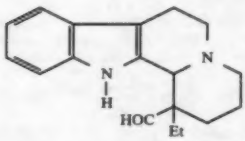
(I)

wherein:

(a) R is —OH, R′ is H, and R″ is COOY wherein Y is selected from the group consisting of $—CH_3$ and $—CH_2CH_3$;

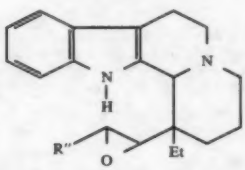
(b) R is —OH, and both R′ and R″ are H; or

(c) R″ is COOY, and R and R′ together form a double bond, said process comprising reacting a compound of the formula (II)



(II)

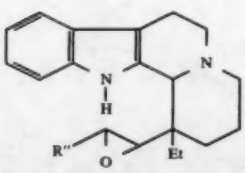
with an alpha-halo-ester of the formula CH_2X-R″ wherein X is selected from the group consisting of Cl, Br, and I and R″ is COOY, in the presence of a base containing at least one member selected from the group comprising alkaline alcoholates and metal amides where the metal is selected from the group consisting of Na, K, or Li, according to the Darzens reaction conditions, to give the corresponding glycidic esters of the formula (III)



(III)

and thereafter treating the glycidic ester with a Lewis acid in an inert solvent and/or with a mineral acid in alcoholic solution to produce a compound of formula (I).

6. Glycidic esters represented by the formula (III):



(III)

wherein R″ is $—COOCH_3$ or $—COOCH_2CH_3$.

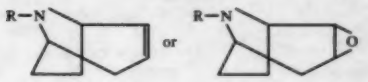
4,379,936

NORTROPANE DERIVATIVES

Robert L. G. Clarke, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 240,179, Mar. 3, 1981, Pat. No. 4,341,895.
This application Apr. 19, 1982, Ser. No. 369,545
Int. Cl.³ C07D 451/02
U.S. Cl. 546—91 3 Claims

1. A compound of the formula



wherein R is alkanoyl having from two to four carbon atoms.

4,379,937

SELECTIVE ACYLATION OF HYDROXY-AMINO-ARYLSULFONIC ACIDS

Anthony J. Corso, Coventry; Kathleen M. Colavito, Warwick, and Thomas S. Phillips, East Greenwich, all of R.I., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Sep. 23, 1981, Ser. No. 304,748
Int. Cl.³ C07D 215/16; C07C 143/42
U.S. Cl. 546—155 15 Claims

1. In a method for making an N-acylated hydroxy-amino-arylsulfonic acid which comprises dissolving said hydroxy-amino-arylsulfonic acid in aqueous solution and reacting it with an acylating agent, the improvement which comprises forming a lithium salt of said sulfonic acid in aqueous solution and conducting the acylation reaction at a pH of about 3 to 6.

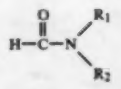
4,379,938

PROCESS FOR PRODUCING 2,3,5-TRICHLOROPYRIDINE

Hansjakob Fäh, Ettingen, and Alfred Grieder, Böckten, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 148,849, May 12, 1980, Pat. No. 4,287,347.
This application May 22, 1981, Ser. No. 266,263
The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.
Int. Cl.³ C07D 213/02
U.S. Cl. 546—345 10 Claims

1. A process for producing 2,3,5-trichloropyridine which comprises allowing 3,5-dichloro-2-pyridone in an inert organic solvent substantially free of water to react with at least about a molar equivalent amount of phosgene at from about 30° to about 50° C. in the presence of at least about 0.01 molar equivalent amount of an N,N-disubstituted formamide of the formula



in which each of R_1 and R_2 is the same or different alkyl group of 1 to 4 carbon atoms or R_1 and R_2 taken together, together with the nitrogen atom to which they are attached, are pyrrolidino, piperidino or morpholino, and neutralizing with base any excess phosgene in the mixture at the completion of the reaction.

4,379,939

PREPARATION OF NITROGEN FERTILIZERS FROM OXALATE ESTERS PREPARED BY THE OXIDATIVE CARBONYLATION OF ALCOHOLS OVER NOBLE METAL CATALYSTS UTILIZING REGENERABLE 2,5-CYCLOHEXADIENE-1,4-DIONE OXIDANTS

Robert J. Radel, and Jack M. Sullivan, both of Florence, Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 137,204, Apr. 4, 1980, now Defensive Publication No. T100,903. This application Jun. 30, 1980, Ser. No. 164,418

Int. Cl.³ C07C *69/36, 67/36*

U.S. Cl. 560—193 **20 Claims**

1. A process for the oxidative carbonylation of substituted or unsubstituted alcohols having between 1 and 10 carbon atoms to produce product oxalate esters eminently suitable for use as fertilizer intermediates and byproduct hydroquinone, which process comprises reacting in a reaction vessel under essentially anhydrous conditions, at pressures in the range between about 1000 psi and about 5000 psi and at temperatures in the range between about 80° C. and about 200° C., a mixture of an alcohol and carbon monoxide or a mixture of an alcohol, carbon monoxide and a co-solvent, said alcohol being either an aromatic alcohol, a monohydric saturated aliphatic alcohol, or a saturated alicyclic alcohol, and said co-solvent being nonreactive to said carbon monoxide under said reaction conditions; said reacting mixture in contact with a platinum group metal salt catalyst, or a complex thereof, and a substituted or unsubstituted quinone, wherein the molar ratio of said quinone:-platinum group metal salt ranges between about 3160:1 and about 100:1; subsequently filtering and recycling said catalyst; distilling the resulting reaction product to separate the remaining alcohol or alcohol and co-solvent from said esters; recovering said esters as product; recycling said alcohol or alcohol and solvent to said reaction vessel; and recovering hydroquinone as byproduct.

4,379,940

VINYL ACETATE PURIFICATION PROCESS

Richard C. Dickerson, Virginia Beach, Va., assignor to Ecolochem, Inc., Norfolk, Va.

Filed Oct. 27, 1980, Ser. No. 201,373

Int. Cl.³ C07C *67/00, 67/56*

U.S. Cl. 560—248 **13 Claims**

1. A process for removing acetic acid contaminant from liquid vinyl acetate monomer comprising the following steps:

(a) providing a bed of a dehydrated anion exchange resin; and

(b) passing said vinyl acetate monomer containing acetic acid through said anion exchange resin bed whereby said acetic acid contaminant is removed from said vinyl acetate monomer.

4,379,941

RESOLUTION OF RACEMIC AMINO ACIDS

David W. House, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 8, 1982, Ser. No. 338,199

Int. Cl.³ C07B *19/00*

U.S. Cl. 562—401 **6 Claims**

1. A method of preparing optically active amino acids comprising contacting a solution containing the diastereomeric esters from a racemic amino acid and an optically active 2-isopropyl-5-methylcyclohexanol with a chromatographic support selected from the group consisting of silica, alumina, modified silicas, and the zeolites, eluting said support with a solvent under chromatographic conditions, collecting at least one effluent fraction containing a purified diastereomer, hydrolyzing the purified diastereomer to liberate an optically active amino acid, and recovering said optically active acid.

4,379,942

PROCESS FOR MANUFACTURING METHYL KETONES BY OXIDATION OF TERMINAL OLEFINS

Hubert Mimoun, Rueil Malmaison; Robert Charpentier, Villeneuve les Sablons, and Michel Roussel, Colombes, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

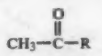
Continuation-in-part of Ser. No. 104,941, Dec. 18, 1979, Pat. No. 4,310,704. This application May 20, 1981, Ser. No. 265,488

Claims priority, application France, Dec. 18, 1978, 78 35740; Jan. 11, 1979, 79 00828; Nov. 13, 1979, 79 28154

Int. Cl.³ C07C *45/28*

U.S. Cl. 568—385 **19 Claims**

1. A process for producing a methyl ketone of the formula



from an olefin of the formula $RCH{=}CH_2$, wherein R is $C_{1\text{-}20}$ hydrocarbyl, said process comprising the step consisting essentially of contacting said olefin in the liquid phase with a palladium catalyst and a peroxide oxidizing agent:

wherein said palladium catalyst has the formula PdAA', wherein A is fluoborate, acetate or trifluoroacetate; and A' is OOR_1, wherein R_1 is $C_{3\text{-}20}$ hydrocarbyl; and

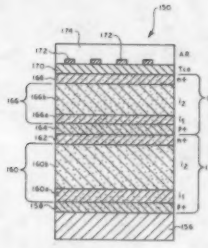
wherein said oxidizing agent is hydrogen peroxide or an organic hydroperoxide of the formula R_2OOH, wherein R_2 is $C_{4\text{-}20}$ tertiary alkyl, aralkyl or alkylaryl.

4,379,943

CURRENT ENHANCED PHOTOVOLTAIC DEVICE

Chi C. Yang, Troy; Arun Madan, Birmingham; Stanford R. Ovshinsky, Bloomfield Hills, all of Mich., and David Adler, Lexington, Mass., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Dec. 14, 1981, Ser. No. 330,571
Int. Cl.³ H01L 31/06, 31/18
U.S. Cl. 136—249 116 Claims



98. A multiple cell photovoltaic device formed from multiple layers of amorphous silicon alloys deposited on a substrate which provides improved current generating capability, said device comprising:

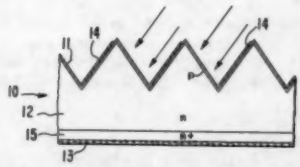
a plurality of single cell units arranged in series relation, each said single cell unit comprising a first doped amorphous silicon alloy layer deposited on said substrate by the glow discharge decomposition of at least silane gas (SiH_4) and diborane; a first intrinsic amorphous silicon alloy layer deposited on said first doped layer by the glow discharge decomposition of at least silane gas (SiH_4); a second intrinsic amorphous silicon alloy layer deposited on said first intrinsic layer by the glow discharge decomposition of at least silicon tetrafluoride (SiF_4) and hydrogen and/or silane gas (SiH_4); and a further doped amorphous silicon alloy layer deposited on said second intrinsic layer by the glow discharge decomposition of at least silicon tetrafluoride (SiF_4), phosphine PH_3, and hydrogen and/or silane gas (SiH_4).

4,379,944

GROOVED SOLAR CELL FOR DEPLOYMENT AT SET ANGLE

Peter G. Borden, Menlo Park; Ronald L. Bell, Woodside, and Syed B. Hyder, Los Altos Hills, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 5, 1981, Ser. No. 232,062
Int. Cl.³ H01L 31/06
U.S. Cl. 136—259 8 Claims



1. A solar cell for deployment at a set angle with respect to incoming radiation comprising:

a wafer of a semiconductor material having a series of grooves formed on the front surface thereof, said grooves forming first and second sets of sidewalls, all of the sidewalls of each set being oriented in generally the same direction;

a network of metal contact lines formed on at least some of the sidewalls of said first set, whereby the body of said cell may be tilted to receive incoming radiation in a manner such that substantial amounts of said incident radiation impinges on said sidewalls of said second set and said network of metal contact lines is substantially shadowed;

a pn junction formed in at least a portion of said sidewalls of said grooves;

contact metallization formed on the back surface of said wafer; and

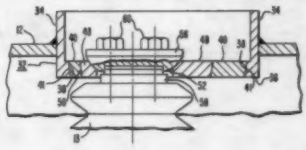
apparatus for receiving and maintaining said solar cell at a set angle with respect to incoming radiation.

4,379,945

ADJUSTABLE INSULATOR ATTACHMENT FOR ISOLATED PHASE BUS SWITCH

Alexander Zwillich, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 25, 1981, Ser. No. 277,462
Int. Cl.³ H02G 5/06
U.S. Cl. 174—99 B 7 Claims



1. Apparatus for attaching an insulator to an electrical conductor comprising:

a base member attached to the electrical conductor, said base member including a mounting portion substantially tangential to the surface of the conductor and means defining a first circular aperture through said mounting portion;

a first circular positioning plate comprising means for supporting said first positioning plate within said first aperture and means defining a second circular aperture through said first positioning plate and nonconcentric therewith;

a second circular positioning plate comprising means for supporting said second positioning plate within said second aperture; an insulator attachment member; and means for eccentrically supporting said attachment member upon said second positioning plate;

means for fixedly attaching said attachment member to an insulator; and

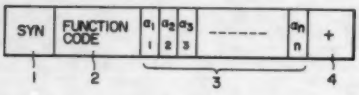
means operable between disengaged and engaged conditions for permitting rotation of said first and said second positioning plates when in the disengaged condition, and for fixedly locating said first positioning plate, said second positioning plate, and said attachment member relative to the electrical conductor when in the engaged condition;

whereby rotation of said first and second positioning plates is operable to adjust the position of an insulator relative to the electrical conductor within planes tangential to the surface of the electrical conductor.

4,379,946
SIGNALLING SYSTEM AND SIGNAL CONTROL EQUIPMENT FOR MULTI-ADDRESS CALLING

Toshiro Mizuno, and Kazuo Imai, both of Iruma, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed May 20, 1981, Ser. No. 265,484
Claims priority, application Japan, Jun. 5, 1980, 55-74930; Feb. 27, 1981, 56-27930; Mar. 9, 1981, 56-34080
Int. Cl.³ H04L 11/15
U.S. Cl. 178—3 9 Claims



1. A signalling system for multi-address calling for transmitting the same information from an originating terminal to a plurality of destination terminals, in which a control signal related to the plurality of destination terminals, which is transmitted and received between the originating terminal and an exchange, is composed of:

a synchronize signal for detecting the beginning of the control signal;

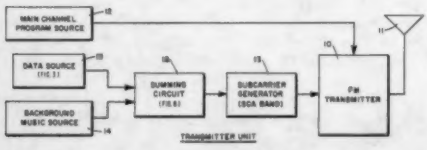
a function determination field for indicating that the control signal is any one of at least a selection signal, a call accepting state indication signal, and a data receiving state indication signal; and

a terminal appointing field in which respective one bit time slots are assigned to each of the destination terminals in a predetermined order so that the signal set in the function determination field is allotted as a result of one bit appearing in said respective time slot.

4,379,947
SYSTEM FOR TRANSMITTING DATA SIMULTANEOUSLY WITH AUDIO

Paul Warner, Port Washington, N.Y., assignor to Teleprompter Corporation, New York, N.Y.

Filed Feb. 2, 1979, Ser. No. 9,187
Int. Cl.³ H04H 5/00; H04J 1/14
U.S. Cl. 179—1 GD 23 Claims

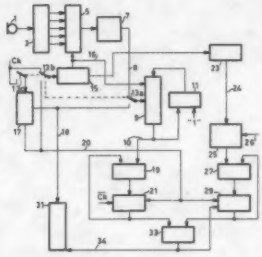


11. In a broadcasting system for transmitting a main program on a channel carrier and an auxiliary audio program such as background music on subcarriers of the channel carrier, data transmission means for transmitting a data signal simultaneously with the auxiliary audio program on the same subcarriers of the channel carrier without interruption of the transmission of either the data signal or the auxiliary audio program.

4,379,948
METHOD OF AND ARRANGEMENT FOR DERIVING CHARACTERISTIC VALUES FROM A SOUND SIGNAL

Hermann Ney, and Michael H. Kuhn, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 29, 1980, Ser. No. 192,156
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939077
Int. Cl.³ G10L 1/00
U.S. Cl. 179—1 SC 2 Claims



1. An arrangement for deriving characteristic values from a sound signal having a transducer circuit, which circuit receives the electrical signal derived from the sound signal and on whose output short-time-spectrum signal values are available, which values represent the energy of the electrical signal in consecutive equal time intervals for each of a plurality of adjacent frequency ranges, comprising:

a memory (9) having an address input;

a clock supplying a clock signal;

multiple parallel switch means (13) to connect said address input of said memory to the output (8) of said transducer circuit (3, 5, 7) under the control of said clock signal; said multiple parallel switching means being a series of switches connected in parallel, one of which connects said memory address input to said transducer circuit output when a sound signal is present on said output to receive said short-time-spectrum signal values and the number of the associated frequency ranges as addresses;

an address circuit (15, 17) which consecutively addresses the memory location (19, 21) of said memory under the control of said clock signal via said switching means;

a data output (10) for said memory;

a data output of said memory (10) connected to said address circuit;

said address circuit forming some of the contents of said addressed memory locations of each frequency range;

an adder (11) connected to said data output of said memory such that said adder increments the content of each addressed memory location by one unit and stores the result at said location, thus storing the number of times that the corresponding signal has appeared on said transducer output;

a result memory (31);

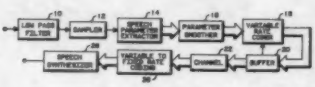
a comparator circuit (33, 35) to compare the sum of the contents of said addressed memory locations with multiples of a quantile value which is derived from the total number of short-time-spectrum signal values of each frequency range and, when a multiple is exceeded to store the instantaneous address of the address circit (15, 17) in said result memory connected thereto;

said result memory containing the signal values representing the desired characteristic values after all memory locations of said memory (9) have been addressed by the address circuit.

4,379,949
METHOD OF AND MEANS FOR VARIABLE-RATE CODING OF LPC PARAMETERS

Yeunung Chen, Richardson, Tex., and Michael J. McLaughlin, Hoffman Estates, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 10, 1981, Ser. No. 291,648
Int. Cl.³ G10L 1/00
U.S. Cl. 179—15.55 R **17 Claims**



1. A method of minimizing an amount of digital information sent to characterize a signal that has been divided into frames of equal times and for which parameters of linear predictive coding have been determined for each of a plurality of the frames, the method comprising:

(a) storing parameter values of a predetermined number of frames;

(b) determining interpolated values resulting from linear interpolation between parameter values of a first frame and a parameter value of a frame of the predetermined number;

(c) comparing the interpolated values with the parameter values at frames between the first frame and the frame of the predetermined number to obtain compared values;

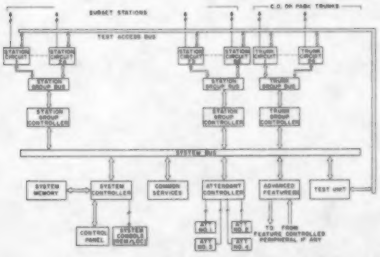
(d) testing the compared values against a predetermined threshold; and

(e) transmitting the parameter value of the frame of the predetermined number when no compared value exceeds the threshold.

4,379,950
DISTRIBUTED CONTROL MEMORY NETWORK

Fahim Ahmed, Guelph, Canada, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

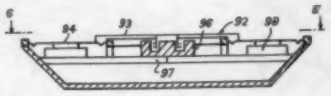
Filed Mar. 31, 1980, Ser. No. 135,464
Claims priority, application Canada, Jul. 23, 1979, 332385
Int. Cl.³ H04M 3/00
U.S. Cl. 179—18 ES **3 Claims**



1. A distributed communications system including a common system controller including system processor and associated memory, said system controller operative to control a plurality of groups of stations, with each group of stations including a group controller comprised of a group processor and associated memory, a system bus interacting between said system controller and said group controllers for the transfer of data in pulse code modulation from said system controller to selected ones of said group controllers and from said group controllers individually to said system controller, a common random access memory in each group controller for providing temporary storage for channeling control data bidirectionally between the system processor and the group processor of the respective group, first address control means in a group controller for accessing said last-mentioned memory in the group of that controller from said system bus for transfer of data from said bus to said memory, second address control means in said group controller for accessing said last-mentioned memory for the transfer of data to said last-mentioned memory from said group and means responsive to first receipt of a signal indicative of means accessing said last-mentioned memory for applying a wait signal to any other accessing means attempting to access said memory and in which each group controller includes a direct path to its group processor by passing said temporary storage memory whereby to reset the group processor on a signal from the system processor over said direct path.

4,379,951
ELECTRO-ACOUSTIC TRANSDUCER MEANS

Saad Z. M. Gabr, 81 Old Dover Rd., Canterbury, Kent, England

Division of Ser. No. 901,147, Apr. 28, 1978, Pat. No. 4,176,253.
This application Nov. 14, 1979, Ser. No. 94,082
Claims priority, application United Kingdom, Apr. 20, 1977, 16500/77; Apr. 25, 1977, 17215/77; May 20, 1977, 21383/77; Jun. 1, 1977, 23208/77; Jan. 23, 1978, 2629/78
Int. Cl.³ H04R 7/02, 9/02
U.S. Cl. 179—101 **2 Claims**

1. An electro-acoustic transducer means comprising:

diaphragm means, said diaphragm means having an outer periphery and an internal aperture bounded by an inner periphery,

rigid chassis means, said chassis means having a first portion extending around said diaphragm means outer periphery and a second portion disposed within said diaphragm means internal aperture and around which said diaphragm means inner periphery extends,

first diaphragm suspension means, said first diaphragm suspension means extending between said diaphragm means outer periphery and said first portion of said chassis means,

second diaphragm suspension means, said second diaphragm suspension means extending inwardly from said diaphragm means inner periphery to said second portion of said chassis means,

electro-mechanical transducer means acting between said diaphragm means and said chassis means,

means mounting said electro-mechanical transducer means within said chassis means second portion, and

connecting means extending outwardly from said electromechanical transducer means to drivingly engage said diaphragm means.

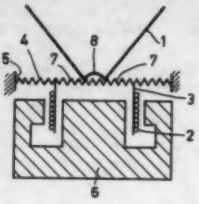
4,379,952
MECHANICAL FILTER FOR AN ELECTRODYNAMIC TRANSDUCER

Adrianus J. M. Kaizer, and Wiert Kopinga, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,772
Claims priority, application Netherlands, Dec. 11, 1979, 7908896
Int. Cl.³ H04R 7/00
U.S. Cl. 179—115.5 PC **7 Claims**

1. An electrodynamic transducer comprising a vibratory cone, a voice coil former on which a voice coil is arranged, and a coupling element between the voice coil former and the cone comprising a centering diaphragm which extends across the

voice coil former with the cone secured to a portion of the centering diaphragm which is situated within the periphery of the voice coil former and the portion of the centering dia-



phragm which constitutes the coupling element between the voice coil former and the cone being operative to function as a mechanical filter.

4,379,953

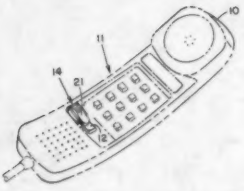
TELEPHONE SWITCH RETAINING APPARATUS

Leslie G. Huff, 11512 Tincup #208, Austin, Tex. 78750

Filed Aug. 10, 1981, Ser. No. 291,558

Int. Cl.³ H01H *9/22*

U.S. Cl. 179—178 **9 Claims**



1. A telephone switch retaining apparatus comprising:
- a first means including a generally flat surface with securing means for securing the first means to a telephone apparatus having a receiver, transmitter and a switch button;
- a second means included with the first means for longitudinal sliding movement and being positioned relative to the first means such that longitudinal sliding movement of the second means will selectively engage and depress the switch button of said telephone apparatus as a result of the sliding engagement and maintain the switch button depressed.

4,379,954

LEVER OPERATED PLURAL SWITCH ASSEMBLY

Masayosi Iwata, Hashima; Harumi Douke, Komaki; Yoshikazu Hayashi, Gifu; Tadashi Yokoyama, Kuwana, and Yukio Mizuta, Nishi, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

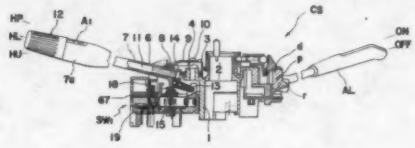
Filed Oct. 21, 1980, Ser. No. 199,214

Claims priority, application Japan, Oct. 24, 1979, 54-147425[U]

Int. Cl.³ H01H *9/00, 3/16*

U.S. Cl. 200—4 **8 Claims**

1. A combination switching arrangement for use in a motor vehicle and the like and comprising:
- a support frame;
- a lever support member pivotally mounted to said support frame;
- a control level member pivotally mounted to said lever support member;
- said control level member having a control shaft extending axially therethrough and said control shaft being rotatable about the longitudinal axis of said control level member;
- said control shaft carrying a first actuating member;
- said control level member carrying a second actuating member and being pivotally movable relative to said lever support member about a second axis;
- said lever support member carrying a third actuating member and being pivotally movable relative to said support frame about a first axis;
- a switching unit mounted on said support frame and having a switch base having at a first surface thereof said control lever member, said control shaft and said first, second and third actuating members and carrying on said first surface a plurality of switching elements to be selectively opened and closed by operation of said first, second and third actuating members;



- first, second and third actuating pieces mounted on said first surface of said switch base and operable by said first, second and third actuating members, respectively, to open and close respective of said switching elements;
- an additional switching element mounted on a second surface of said switch base, opposite to said first surface thereof;
- a fourth actuating piece having a bridging contact mounted thereon and disposed on said second surface of said switch base; and
- said fourth actuating piece and one of said first, second and third actuating pieces having portions mechanically coupled through an aperture formed in said switch base, such that motion of said one actuating piece in use is transmitted to said fourth actuating piece to selectively open or close said additional switching element.

4,379,955

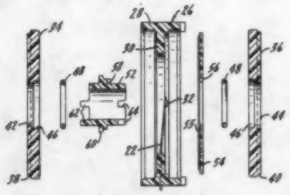
SEALED ROTARY SWITCH

John Comerford, Glendale Heights, Ill., assignor to Oak Industries, Inc., Rancho Bernardo, Calif.

Filed Mar. 1, 1982, Ser. No. 353,831

Int. Cl.³ H01H *19/64*

U.S. Cl. 200—11 DA **8 Claims**



1. A sealed rotary switch, comprising:
- a stator having side walls with generally open ends;
- first and second covers having aligned openings, one cover being located near each end of the stator and in contact with the side walls, the joints between the covers and the side walls including a notch filled with adhesive sealant;
- a rotor including a hub and a printed circuit board connected to the hub, the rotor being mounted for rotation in the cover openings with the printed circuit board located between the covers, the covers each having a seat formed around the opening, resilient seal members being disposed in the seats to seal against the rotor hub; and

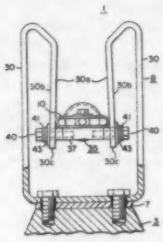
electrical leads insert-molded in the stator and extending into contact with the printed circuit board in the sealed interior of the stator.

4,379,956

BREAK-JAW CONSTRUCTION FOR A DISCONNECTING SWITCH STRUCTURE

Charles M. Cleaveland, North Huntingdon, and Peter M. Kowalik, Trafford, both of Pa., assignors to Cleaveland/Price Enterprises, Inc., Trafford, Pa.

Filed Dec. 15, 1980, Ser. No. 216,686
Int. Cl.³ H01H *31/30, 1/42*
U.S. Cl. 200—48 A **4 Claims**



1. A high-voltage disconnecting switch comprising a swinging movable disconnecting switchblade (10) making separable opening and closing contacting engagement with a stationary switch contact assembly (8), means pivotally mounting said swinging movable disconnecting switchblade (10) about a stationary pivot, said stationary switch contact assembly (8) comprising a confronting pair of inwardly turned contact fingers (30*a*) turned inwardly from their relatively stationary outer contact supporting strap portions (30), said inwardly turned contact fingers (30*a*) having apertures provided ajacent their lower free ends (30*c*), a floating tie-bolt assembly (35) extending through the two aforesaid apertures and constituting an end limiting stop for the completely closed circuit position of the swinging movable disconnecting switchblade when it is fully closed, whereby lateral movement of the switchblade (10) during the existence of heavy fault currents pushing one contact finger (30*a*) will cause the floating tie-bolt assembly (35) to carry the other opposed contact finger (30*a*) along therewith for good contacting movement with the switchblade, said floating tie-bolt assembly (35) including a metallic tube (37) having its outer ends interiorly threaded to accommodate mounting bolts (40), spring means (43) interposed between the head (40*a*) of each mounting bolt (40) and the outer face surface (30*b*) of each contact finger (30*b*), and an insulating bushing (41) encircling each mounting bolt (40) and passing through the respective aperture in the contact finger (30*a*) to prevent current flow from the switchblade into the spring means (43).

4,379,957

MODULAR "Y"-TYPE ENCLOSURE ELEMENTS FOR GAS INSULATED SUBSTATIONS

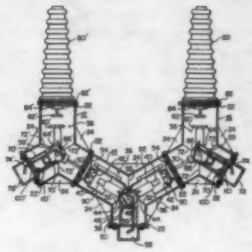
Ben J. Calvino, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 14, 1981, Ser. No. 224,872
Int. Cl.³ H01N *33/14*
U.S. Cl. 200—145 **11 Claims**

1. A compressed gas modular circuit control system, comprising:

a first generally "Y"-shaped enclosure element having a circuit control means disposed therein for controlling the flow of current therethrough and a flanged opening means attached to a leg of said enclosure element for electrically and mechanically connecting said enclosure element to another enclosure element; and

a second generally "Y"-shaped enclosure element having a circuit breaker control means disposed therein for control-



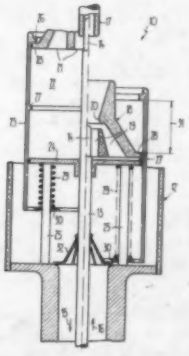
ling the flow of current therethrough and a flanged opening means attached to a leg of said second enclosure element for electrically and mechanically attaching said second enclosure element to first said enclosure element.

4,379,958

GAS-BLAST SWITCH

Johann Blatter, Schönenwerd, and Walter Schaad, Oberentfelden, both of Switzerland, assignors to Sprecher & Schuh AG, Aarau, Switzerland

Filed Sep. 2, 1980, Ser. No. 183,430
Claims priority, application Switzerland, Nov. 22, 1979, 10413/79
Int. Cl.³ H01N *33/88*
U.S. Cl. 200—148 A **6 Claims**



1. A gas-blast switch comprising:

a thrust rod;

a movable contact element secured to one end of said thrust rod;

a stationary contact element;

said movable contact element being capable of being brought into and out of engagement with said stationary contact element;

said movable contact element having a free end;

a blast nozzle secured to said thrust rod and surrounding said free end of said movable contact element;

said blast nozzle having inlet means;

a cylinder containing a pump chamber surrounded by said cylinder;

said pump chamber containing an extinguishing gas;

said inlet means of said blast nozzle being in flow communication with said pump chamber;

said pump chamber during the course of a cut-off stroke of said gas-blast switch being pressurized;

a first stationarily supported piston upon which there is displaceably guided said cylinder;

a second piston situated opposite said first piston;

said blast nozzle being constructed to constitute floor means of said second piston;

said second piston being displaceable relative to said cylinder between two end positions;

means for moving the cylinder during a cut-off stroke of the gas-blast switch in the same direction as the movable contact element but through a smaller displacement path than the path of movement of said movable contact element;

said means for moving the cylinder comprising two stop members arranged within said cylinder;

said stop members cooperating with said second piston for defining the end positions of said cylinder with respect to said second piston and forming with the latter a drag connection between said thrust rod and said cylinder; and

at least one spring member for loading said cylinder in the direction of the cut-off stroke of the gas-blast switch.

4,379,959

METHOD OF AND APPARATUS FOR WIRE-CUTTING A WORKPIECE BY ELECTROEROSION

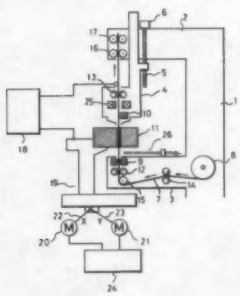
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Oct. 3, 1980, Ser. No. 193,668

Claims priority, application Japan, Oct. 4, 1979, 54-128621; Nov. 21, 1979, 54-151274

Int. Cl.³ B23P *1/12*

U.S. Cl. 219—69 M **17 Claims**



1. In a method of wire-cutting a workpiece by electroerosion wherein a continuous wire electrode is axially transported from a supply means to a collection means along a predetermined wire guiding path to traverse the workpiece linearly between a pair of wire guide members disposed at opposite sides of the workpiece in the path and adapted to position the wire electrode therebetween in a machining relationship with the workpiece; and an electrical machining current is passed between the wire electrode and the workpiece across a machining gap flooded with a machining medium to electroerosively remove material from the workpiece while the workpiece is displaced transversely and relative to the wire electrode along a prescribed feed path to form a desired cut in the workpiece, the improvement which comprises the preliminary steps of:

(a) forming a straight through-hole in the workpiece at a preselected location thereof representing a start point of said prescribed feed path;

(b) inserting through said through-hole a detached wire element constituting a slender guide element and being straight at least along the length of said through-hole;

(c) securely holding said detached wire element on said workpiece while leaving it inserted in said through-hole against dropping out;

(d) positioning a wire electrode having a broken, free end portion extending continuously from the supply means through a first of said wire guide members disposed at an inlet side of said workpiece to locate said broken, free end portion ahead of said workpiece;

(e) positioning said workpiece to locate said broken, free end portion projecting from said first wire guide member, ahead of and coaxially with said through-hole;

(f) connecting an end of said detached wire element projecting from said through-hole at said inlet side with said broken, free end portion of the wire electrode;

(g) withdrawing said detached wire element from said through-hole through a second of said wire guide members disposed at an outlet side of said workpiece and continuingly displacing said element to advance said wire electrode through said second wire guide member onto said collection means; and subsequently

(h) proceeding to the wire-cutting of said workpiece by electroerosion.

4,379,960

ELECTRICAL DISCHARGE MACHINING METHOD AND APPARATUS USING ULTRASONIC WAVES AND MAGNETIC ENERGY APPLIED CONCURRENTLY TO THE MACHINING GAP

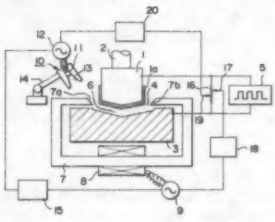
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Continuation-in-part of Ser. No. 150,355, May 16, 1980, Pat. No. 4,366,358. This application Jan. 19, 1981, Ser. No. 226,417

Claims priority, application Japan, Jan. 22, 1980, 55-6632

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 M **29 Claims**



1. A method of electroerosively machining a workpiece, comprising the steps of:

positioning a tool electrode in a spaced juxtaposition with said workpiece to define a machining gap therewith in a machining liquid received in a worktank;

applying a succession of electrical machining pulses between said tool electrode and said workpiece to produce electrical discharges across said machining gap flooded with said machining liquid, thereby removing material from said workpiece and forming a recess therein;

relatively displacing said tool electrode and said workpiece so that the successive removal of material progressively advances the formation of said recess in said workpiece;

applying a magnetic field of a magnitude not less than 100 Gauss to the region of said recess for a first time period;

applying ultrasonic waves of a frequency not less than 10 kHz through said machining liquid to the region of said recess for a second time period; and

providing a third time period in which said first and second time periods coincide with each other at least partly.

4,379,961

METHOD OF MAKING AN APPARATUS CONTAINING A DIAPHRAGM

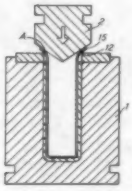
Jorn M. Schmidt, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 48,845, Jun. 15, 1979, abandoned, which is a continuation of Ser. No. 898,092, Apr. 20, 1978, abandoned. This application Oct. 16, 1980, Ser. No. 197,517

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1777, 2718609

Int. Cl.³ B23K *11/16*

U.S. Cl. 219—78.01 1 Claim



1. A method of making apparatus having a thin walled diaphragm unit, comprising the steps of, initially forming a thin tube element of a ferrous compound and with a cylindrical shape, providing a ring element of a ferrous compound having an inside diameter larger than the diameter of said tube element, forming an oblique rim on said tube element, applying a layer of from 4 to 8 microns of an alloy of phosphorous and nickel having a melting point of about 900° C. only on the ring element, said alloy having a substantially higher electrical resistance than said ferrous compounds, placing said ring element in surrounding relation to said tube element in juxtaposition to said rim, said layer being between said ring element and said rim, and pressing said rim into contact with said ring element while passing an electric current through said rim and said ring element to provide heat for joining said elements together, said heat being concentrated in said layer of said alloy which attains a substantially higher temperature than said tube and ring elements by reason of said substantially higher electrical resistance thereof.

4,379,962

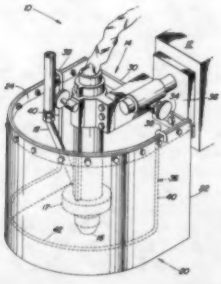
SUPPORT STRUCTURE FOR PLASMA ARC CUTTING TORCH SHIELD

Richard W. Hirst, Hazel Green, Wis., assignor to Deere & Company, Moline, Ill.

Filed Apr. 30, 1981, Ser. No. 259,128

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—121 P 10 Claims



1. In a machine including a frame supporting a plasma arc cutting torch having a downwardly projecting nozzle and a shielding structure including a shield supported in surrounding relationship to the nozzle, an improved shield support structure, comprising: a pair of upwardly opening receptacles mounted on the frame in spaced relationship to each other at respective locations elevated above and equidistant from the torch nozzle; an elongate shield holder having downwardly extending projections at its opposite ends; said projections being respectively releasably received in the pair of upwardly opening receptacles; said shield holder being located approximately at the level of the receptacles and having an arcuate portion extending at least 180° about the torch nozzle; and a plasma arc shield secured to the shield holder in depending relationship thereto and having a lower edge located no higher than the bottom of the nozzle.

4,379,963

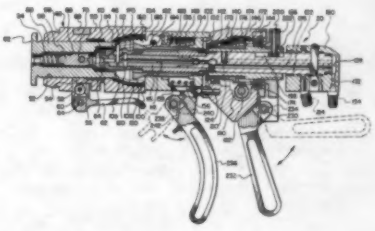
WELDING APPARATUS DESIGNED PARTICULARLY FOR USE WITHIN A CONFINED AREA

Gasparas Kazlauskas, 10219 Briarwood Dr., Los Angeles, Calif. 90024

Filed Jan. 5, 1981, Ser. No. 222,704

Int. Cl.³ B23K *9/225*

U.S. Cl. 219—136 21 Claims



1. A welding apparatus for producing a weld on a workpiece, said welding apparatus comprising:

a main housing having a longitudinal center axis, said main housing being tubular having an elongagted opening;

a shaft mounted within said elongated opening, said shaft being longitudinally movable along said longitudinal center axis and rotatable about said longitudinal center axis, a welding electrode connected to one end of said shaft, said welding electrode being spaced from said main housing, said welding electrode being rotated by rotation of said shaft;

securing means for longitudinally fixing said shaft relative to said main housing at a particular established position, said securing means being releasable permitting longitudinal movement of said shaft relative to said main housing; and

handle means mounted upon said main housing, said handle means being movable between an operable position and a collapsed position, whereby said handle means is to be located in said collapsed position and said welding apparatus then moved through a confining opening into an enlarged internal chamber to be then utilized to weld with said handle means being moved to said operable position.

4,379,964
METHOD OF FOOD HEATING CONTROL BY DETECTING LIBERATED GAS OR VAPOR AND TEMPERATURE OF FOOD

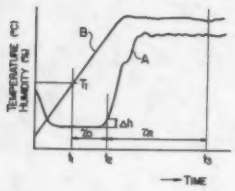
Takato Kanazawa; Keijiro Mori, both of Nara; Shigeru Kusunoki, Yamatokoriyama; Kazunari Nishii, Yamatokoriyama, and Tomotaka Nobue, Yamatokoriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 14, 1980, Ser. No. 167,844

Claims priority, application Japan, Jul. 20, 1979, 54-93043; Sep. 6, 1979, 54-114501

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—492 **7 Claims**



1. Heating apparatus including an oven and means for generating heating power for cooking foodstuffs, comprising:

means for generating a temperature signal corresponding to the surface temperature of said foodstuff;

means for amplifying said temperature signal and comparing said signal with a predetermined temperature setting, said means producing a temperature detection signal TEMP at a time t_1;

means for generating at least one of a humidity and gas concentration signal corresponding to the humidity and gas concentration within said oven;

means for amplifying a selected one of said humidity and gas concentration signals and producing a detection signal HUM at a time t_2 when said one of said humidity and gas concentration begins to increase;

means for starting and stopping said means for generating heating power;

means for receiving and storing said temperature signal and one of said humidity and gas concentration signals; and

a microprocessor for storing said signals and storing and executing a program for the sequence control of the operations of said respective means.

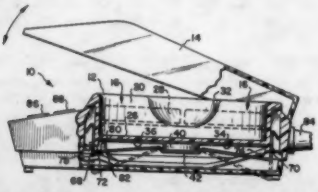
4,379,965
CONTACT LENS DISINFECTING APPARATUS

George H. Dounce, Rochester, and John A. Moore, Wyoming, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Apr. 9, 1981, Ser. No. 252,643

Int. Cl.³ A61L *2/18*; H05B *3/06*

U.S. Cl. 219—521 **13 Claims**



1. Apparatus for disinfecting contact lenses contained within a contact lens carrying case, comprising:

a housing defining a well for supporting a contact lens carrying case, said well being defined by side walls, end walls and bottom support means for supporting and conducting heat to contact lenses contained within said carrying case;

a heat sink positioned in said housing to directly contact said well bottom support means for conducting heat to said bottom support means;

a PTC heater element for providing, and automatically controlling, heat supplied to said heat sink, said PTC heater element being electrically energizable and having the characteristics to initially sharply rise in temperature until a preset temperature is achieved and thereafter maintain that temperature until said PTC heater element is de-energized;

a spring biasing member supporting said PTC heater element and locating and biasing said PTC heater element against said heat sink, including a central portion for receiving and positioning said PTC heater element in close relationship with said heat sink and a pair of extensions extending outwardly from said central portion to form legs for engagement with said housing for locating said PTC heater element relative to said housing and said heat sink; and

locating means being defined in said housing so as to receive and engage said legs of said spring biasing member in order to cause said extensions to sufficiently flex to urge and maintain said PTC heater element in close contact with said heat sink.

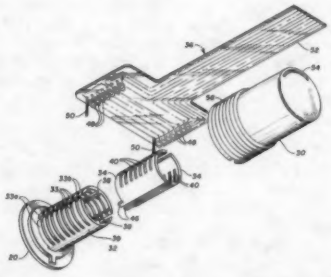
4,379,966
RECEPTACLE FOR ELECTRONIC INFORMATION KEY

William P. Flies, Burnsville, Minn., assignor to Datakey, Inc., Burnsville, Minn.

Filed Jul. 23, 1981, Ser. No. 286,362

Int. Cl.³ G06K *7/06*

U.S. Cl. 235—443 **11 Claims**



1. A receptacle defining a keyway for an insert portion of a key-like device having an inserted and a "locked" position within the receptacle, the key-like device further having a plurality of spaced transverse grooves on said insert portion and containing an electrical element embedded therein, the element including a plurality of electrical leads each of which is carried on the surface of one of each of said grooves, the receptacle comprising:

a plurality of spaced electrically conductive contact heads protruding into said keyway and positioned therein for contacting a correspondingly spaced key lead upon insertion of said key insert portion into the receptacle and rotation of the key to the "locked" position;

finger spring cylinder means surrounding said keyway and including a plurality of arcuate finger spring members so as to form a cylinder-like structure of opposing finger spring pairs, the ends of each finger spring pair being positioned in supporting engagement with one each of said contact heads and the contact heads being arranged in the keyway such that the contact heads are displaced

outwardly and urge the supporting finger spring pairs radially outwardly when the key is rotated to the "locked" position; and,

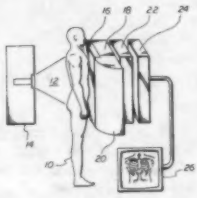
electrical connection means for connecting said receptacle to an operating electrical circuit.

4,379,967

FIBER OPTIC MATRIX CODING METHOD AND APPARATUS FOR RADIATION IMAGE AMPLIFIER

John A. McIntyre, 2316 Bristol St., Bryan, Tex. 77801

Filed Aug. 22, 1980, Ser. No. 180,331
Int. Cl.³ G02B 5/14
U.S. Cl. 250—227 47 Claims



1. An apparatus for analyzing a radiation image comprising:

input means for receiving radiation in the pattern of an image to be reproduced and for converting said radiation pattern into a light pattern;

first coding means for conducting said light pattern from the input means and for coding portions of the light pattern in combinations indicative of the relative positions of said portions of the light pattern wherein said first coding means comprises a plurality of light transmitting elements;

second coding means for conducting said light pattern from the input means and for coding portions of the light pattern in combinations indicative of the relative positions of said portions of the light pattern wherein said second coding means comprises a plurality of light transmitting conduits;

output means for receiving said coded portions of the light pattern from the first coding means and from the second coding means and for converting said coded portions of the light pattern into electrical signals; and

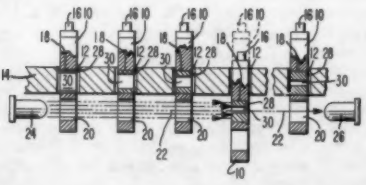
means for determining the relative positions of said portions of said light pattern from the electrical signals provided by the output means to locate the detected incident radiation indicated by the light pattern.

4,379,968

PHOTO-OPTICAL KEYBOARD HAVING LIGHT ATTENUATING MEANS

Richard I. Ely, Orange Park, and Edward I. Nelson, Sunrise, both of Fla., assignors to Burroughs Corp., Detroit, Mich.

Filed Dec. 24, 1980, Ser. No. 220,130
Int. Cl.³ G01D 5/34
U.S. Cl. 250—229 12 Claims



1. Photo-optical apparatus comprising,

a matrix of rows and columns of apertures,

slidably movable members arranged for movement within respective ones of said apertures in said matrix,

each of said movable members having oppositely disposed openings therein, said openings being arranged in vertical, parallel, separated pairs,

light generating means,

light receiving means,

said light generating and light receiving means being axially aligned and arranged so that light from the generating means to the receiving means is uninterrupted by said movable members in one position while in another position of said movable members, said light is partially blocked by said movable members, and

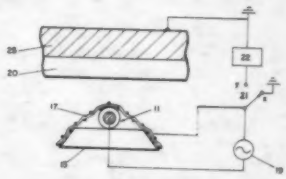
means for accurately varying the amount of light transmitted from said light generating means to said light receiving means, said means being disposed in separate ones of said movable members such that a differing but predictable percentage of total light is received by said light receiving means upon the movement of said movable members from a light unblocking position to a partial light blocking position.

4,379,969

CORONA CHARGING APPARATUS

Harold W. Cobb, Acton, and Richard A. Fotland, Holliston, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Feb. 24, 1981, Ser. No. 237,559
Int. Cl.³ H01T 19/04
U.S. Cl. 250—324 27 Claims



1. Apparatus for generating ions, comprising:

an elongate conductor;

a dielectric sheath for said elongate conductor;

an insulating support for the elongate conductor and dielectric sheath;

a conductive grid contacting said dielectric sheath;

a varying potential applied between said elongate conductor and said conductive grid in order to create a glow discharge; and

means for extracting ions from said glow discharge.

4,379,970

PYROELECTRIC DETECTOR ARRAYS

Archibald L. Fripp, Williamsburg; James B. Robertson, and Roger A. Breckenridge, both of Yorktown, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 191,748, Sep. 29, 1980, Pat. No. 4,341,012.
This application May 13, 1982, Ser. No. 377,892
Int. Cl.³ G01J 1/00
U.S. Cl. 250—338 5 Claims

1. A pyroelectric detector array comprising:

a semiconductor substrate;

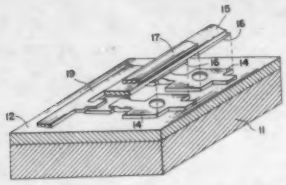
an insulator layer on one side of said semiconductor substrate;

a series of holes in said insulator layer;

a series of nontouching strips of soft metal on said insulator layer with each strip being around a corresponding one of

said series of holes wherein each strip is the output terminal for a pyroelectric detector;

a pyroelectric detector strip mounted over said series of holes in contact with said series of strips; and



a metal layer on said pyroelectric detector strip to provide a ground connection for the pyroelectric detectors.

4,379,971

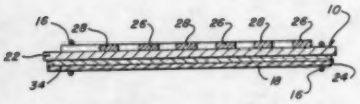
PYROELECTRIC SENSOR

Peter R. Smith, Littleton, and Charles Coleman, Lakewood, both of Colo., assignors to Statitrol, Inc., Denver, Colo.

Filed Nov. 10, 1980, Ser. No. 205,146

Int. Cl.³ G01J 1/00

U.S. Cl. 250—342 **22 Claims**



1. A selective radiation sensing device which is capable of sensing radiated energy having a wavelength in a preselected band, the sensing device comprising:

a body means formed from a thin flexible sheet of pyroelectric material which will generate an electrical charge upon being subjected to a change in temperature;

a first area of electrical conducting material forming a first electrode and adhered to and substantially covering one surface of said pyroelectric material;

one or more areas of electrical conducting material forming at least a second electrode arranged on the opposite side of the pyroelectric material of said body means from the first electrode; and

a thin layer of material which is non-absorbing to all radiation outside of said preselected band, said material being positioned over and adhered to at least a portion of the outer surface of one of said electrodes, said material being capable of absorbing the radiated energy which is within the preselected wavelength band and converting this energy to heat whereby when this radiation is present the generated heat will be conducted from the selective absorbing material to the body means by the metallic electrode so that an electric signal change will be generated in the pyroelectric body material and sensed at the electrodes to indicate the presence of radiation within the preselected wavelength band.

4,379,972

TURBINE VENTILATOR

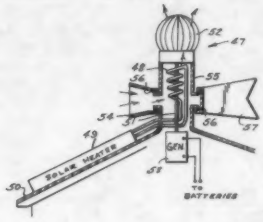
Thomas J. Sosa, San Leandro, Calif., and Daniel T. Sosa, 15576 Farnsworth St., San Leandro, Calif. 94579, assignors to Daniel T. Sosa, San Leandro, Calif.

Filed May 26, 1981, Ser. No. 266,663

Int. Cl.³ F03D 9/00

U.S. Cl. 290—44 **1 Claim**

1. A turbine ventilator, comprising, in combination, a hollow housing mounted on top of an exterior surface of a building roof, opening means through said roof for rising hot air inside said building to enter said housing, a turbine on said housing, said turbine including a base through the top of said housing, and a rotatable spherical member thereupon rotated by said rising hot air, a downward rotor shaft from said spherical member providing electric generator driving means; a solar heater system including a solar collector upon said roof connected by water pipe to a hot water coil inside said housing and around an upper portion of said rotor shaft; a fresh air entry port around a side of said housing, said port being at an elevation that is lower than said water coil, and a rotatable collar around said port having a sidewardly extending vane and a funneled air intake opening on diametrically opposite sides of said collar.



4,379,973

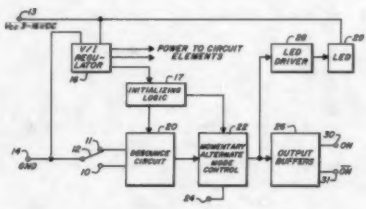
UNIVERSAL LOGIC SWITCH

W. Bard Turner, Lexington, and Thompson Shek, Brighton, both of Mass., assignors to C & K Components, Inc., Newton, Mass.

Filed May 20, 1981, Ser. No. 265,463

Int. Cl.³ H02B 1/24; H01H 9/00

U.S. Cl. 307—112 **22 Claims**



22. A logic switch operable over a predetermined range of input voltages, comprising:

a housing;

mechanical switching means having at least a pair of switch contacts and a switch arm therebetween provided within said housing, said switch arm adapted to be moved by manual force momentarily from a rest position in contact with one of said pair of switch contacts to a second operating position in contact with the other one of said switch contacts, said switching means remaining in said second operating position only so long as manual force is applied thereto;

electronic switching means within said housing for producing an electrical switching function in a selected operating mode from one state of actuation to another state in response to movement of said arm of said mechanical switching means from one of said rest and said second contact positions to the other of said rest and said second contact positions;

circuit means within said housing for initializing said electronic switching means in one of said states of acutation upon interruption of power to said switch;

means provided within said housing for selecting the mode of operation of said electronic switching means; and

output buffer circuit means within said housing for providing a complementary output voltage.

4,379,974

DELAY STAGE FOR A CLOCK GENERATOR

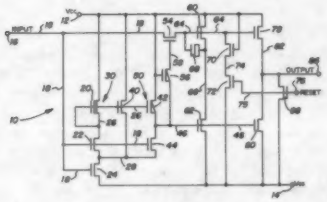
Robert S. Plachno, Lewisville, Tex., assignor to Mostek Corporation, Carrollton, Tex.

PCT No. PCT/US80/01163, § 371 Date Sep. 10, 1980, § 102(e) Date Sep. 10, 1980, PCT Pub. No. WO82/00930, PCT Pub. Date Mar. 18, 1982

PCT Filed Sep. 10, 1980, Ser. No. 261,121

Int. Cl.³ H03K *5/135, 3/295, 3/356, 17/284*

U.S. Cl. 307—269 25 Claims



18. A clock generator circuit for producing clocking signals which receives an input signal at an input terminal, produces an output signal at an output terminal and is powered through first and second power terminals, comprising:

first, second and third transistors each having drain, source and gate terminals and being connected in series between the first power terminal and the second power terminal and forming a first node between said first and second transistors and a second node between said second and third transistors;

a fourth transistor having drain, source and gate terminals connected between the first power terminal and said second node, said gate terminal thereof connected to said first node;

fifth and sixth transistors each having drain, source and gate terminals and being connected in series between the first power terminal and said second node, and forming a third node therebetween, said gate terminal of said fifth transistor connected to said first node;

said gate terminal of said second transistor, said gate terminal of said third transistor and said gate terminal of said sixth transistor being connected to the input terminal;

a seventh transistor having drain, source and gate terminals, said drain terminal thereof connected to the input terminal;

an eighth transistor having drain, source and gate terminals, said drain terminal thereof connected to said gate terminal of said seventh transistor, said gate terminal thereof connected to the first power terminal and said source terminal thereof connected to said third node;

ninth and tenth transistors each having drain, source and gate terminals and being connected in series between the first power terminal and the second power terminal and forming a fourth node therebetween, said gate terminal of said ninth transistor being connected to said source terminal of said seventh transistor and said gate terminal of said tenth transistor being connected to said source terminal of said eighth transistor;

capacitor means connected between said source terminal of said seventh transistor and said fourth node; and

eleventh and twelfth transistors each having drain, source and gate terminals and being connected in series between the first power terminal and the second power terminal and forming the output terminal therebetween, said gate terminal of said eleventh transistor connected to said gate terminal of said ninth transistor and said gate terminal of said twelfth transistor connected to said gate terminal of said tenth transistor.

4,379,975

REVERSE FLOW COOLED DYNAMOELECTRIC MACHINE

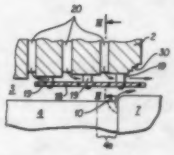
Toshio Kitajima, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 25, 1981, Ser. No. 277,233

Claims priority, application Japan, Jun. 26, 1980, 55-87162

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—59 7 Claims



1. A reverse flow cooled dynamoelectric machine comprising:

a gas tight casing containing cooling gas;

a stator disposed within said casing and including a core of stacked laminations having spaced radially extending cooling passages disposed therein;

a rotor disposed within said stator and spaced therefrom by a gap, said rotor including end turn regions and a gas passage disposed in at least one said end turn region to cool said at least one end turn region of said rotor;

cooling means disposed in said casing;

fan means mounted on said rotor for circulating said cooling gas and including means for the reverse flow circulation of said cooling gas; and

baffle means disposed between said cooling passages of at least one end turn region of said stator and said gas passage of said at least one end turn region of said rotor, said baffle means disposed in said gap and spaced from said laminations for forming a ventilation section so as to prevent the impinging of gas from the cooling passages disposed in said stator with gas from said end turn regions of rotor, the size of said ventilation section gradually increasing toward the axial ends of said machine.

4,379,976

PLANOCENTRIC GEAR DRIVE

Edward J. Pitchford, Glendora, and Edward M. Troup, Mount Baldy, both of Calif., assignors to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.

Filed Jul. 20, 1981, Ser. No. 284,714

Int. Cl.³ F16H *1/20*

U.S. Cl. 310—83 53 Claims

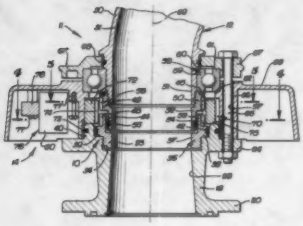
1. A planocentric gear drive, comprising:

a fixed stator gear and a rotatable output gear mounted coaxially and having different numbers of teeth;

a toothed driving gear formed at least in part from a magnetically permeable material and supported for eccentric floating with respect to said common axis and for meshing engagement with said stator and output gears on a common axial line of contact; and

electromagnetic means for orbiting said driving gear about

said axis in meshing engagment with said stator and output gears, whereby the teeth on said driving gear wedge



against the teeth on said output gear to rotate said output gear with respect to said stator gear.

4,379,977

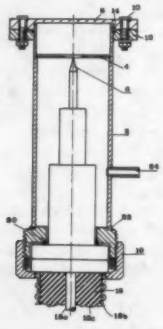
SPACE-DISCHARGE ELECTRONIC DEVICE PARTICULARLY USEFUL AS A FLASH X-RAY TUBE

Yuval Carmel, and Shmuel Eylon, both of Haifa, Israel, assignors to State of Israel, Rafael Armament Development Authority, Ministry of Defense, Haifa, Israel

Continuation of Ser. No. 62,476, Jul. 31, 1979, abandoned. This application May 13, 1981, Ser. No. 262,886

Int. Cl.³ H01J *35/04*

U.S. Cl. 378—136 **7 Claims**



1. A space-discharge electronic tube including a cathode and a target anode, characterized in that said cathode consists of a single planar electrode formed with a circular opening therethrough, and that said target anode is of conical shape and has a pointed tip at the end thereof facing said planar cathode electrode, the longitudinal axis of the target anode being normal to the plane of said planar cathode electrode and the pointed tip of the target anode being located in the plane of said planar cathode electrode at the center of its circular opening.

4,379,978

MEANS AND METHOD FOR MAKING ELECTRICAL CONNECTION TO CATHODE RAY TUBES

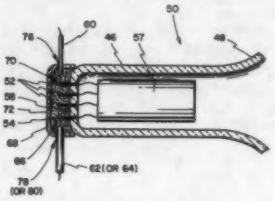
Richard L. Hockenbrock, Mundelein, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Mar. 20, 1981, Ser. No. 245,796

Int. Cl.³ H01J *5/48*

U.S. Cl. 313—318 **6 Claims**

1. In a cathode ray picture tube having a narrow neck terminated by a plurality of electrically conductive pins extending axially from the neck terminus, said tube being characterized by each pin being relatively short and having a radially outwardly extending, electrically conductive wire attached thereto in close adjacency to said neck terminus, said tube having a shallow base for accepting and enclosing said pins in abutting relationship to said neck terminus, said base comprising an insulative cylinder filled with an electrically insulative adhesive, said base having a closed end and an open end facing said terminus, said open end having a plurality of crenelations



equal in number to said wires for receiving and passing said wires, such that said wires are maximally electrically isolated one from the others by their spacings, their radially outward extension, and said insulative adhesive; said base is adhered to said neck terminus by said adhesive; and the overall axial length of said tube when connected for operation is reduced by the shallowness of said base, the relative shortness of said pins, and the radially outward extension of said wires.

4,379,979

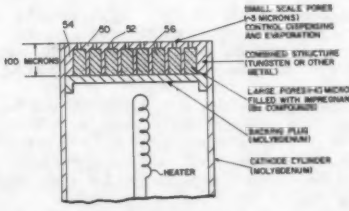
CONTROLLED POROSITY SHEET FOR THERMIONIC DISPENSER CATHODE AND METHOD OF MANUFACTURE

Richard E. Thomas, Riverdale, and Richard F. Greene, Bethesda, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 6, 1981, Ser. No. 232,444

Int. Cl.³ H01J *1/14, 19/06;* **H01K** *1/04*

U.S. Cl. 313—346 R **18 Claims**



1. A method of making a controlled porosity surface sheet useful in cathode structures comprising:

manufacturing a substrate of single crystal silicon which has a predetermined array of microposts upstanding from the substrate, said manufacturing including the step of etching the substrate surface in a crystallographically orientation-dependent etch;

applying a metal layer upon the silicon substrate to a desired thickness including covering the microposts;

abrading the resultant structure in order to remove the surface metal and expose tips of the microposts; and

etching away the silicon substrate including the microposts with an anisotropic etching agent to leave a porous sheet.

15. In a thermionic dispenser type cathode having an emissive member comprising a backing plug, active cathode material adjacent the backing plug and a thin foil facing the backing plug, the foil being formed from at least one refractory metal with a set of uniformly sized and spaced holes therein to permit

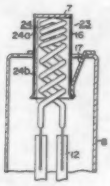
the active cathode material to migrate through the holes and to spread over the exposed surface of the foil when the active cathode material is heated to the proper temperature, the improvement which comprises the holes having a pore width of 1–25 microns on the side of the foil facing away from the cathode material and a larger pore width of 25–100 microns on the other side, pore spacings of from 5–100 microns, and foil thickness from 25–100 microns, said active cathode material substantially filling the portion of the pores having the larger pore width.

4,379,980

QUICK OPERATING CATHODE

Yukio Takanashi, Hiratsuka; Tooru Yakabe, Yokohama, and Shunji Asano, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 20, 1981, Ser. No. 255,637
Claims priority, application Japan, Apr. 21, 1980, 55-51705
Int. Cl.³ H01J *1/22, 1/20, 29/04*
U.S. Cl. 313—446 6 Claims



1. A quick operating type cathode having a cathode body consisting of: a cathode sleeve and a metal substrate which is mounted at the top opening part of the cathode sleeve and the top surface of which is coated with an electron-emissive material; and a double helical coil heater which is inserted within the cathode sleeve and the surface of which is coated with an insulating material, characterized in that said heater comprises a coil part and a pair of leg parts connected to the end part of said coil part, a dense pitch part is formed at the top portion of said coil part, a sparse pitch part is formed in said coil part at the side of the leg parts and the amount of said coated insulating material per unit length of the coil wire at said sparse pitch part is larger than that at said dense pitch part.

4,379,981

FLUORESCENT LAMP HAVING IMPROVED BARRIER LAYER

Larry P. Rusch, East Brunswick, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 4, 1981, Ser. No. 270,472
Int. Cl.³ H01J *61/35, 61/42, 61/54*
U.S. Cl. 313—489 5 Claims

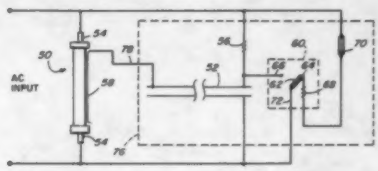
1. A fluorescent lamp comprising a vitreous envelope having electrodes operatively disposed at opposite ends thereof, an electrically conductive first layer carried on the inner surface of said vitreous envelope, an electrically non-conductive second layer carried on said electrically conductive first layer, said electrically non-conductive second layer consisting essentially of a mixture of very finely-divided aluminum oxide and finely-divided titanium dioxide in predetermined relative weight ratio, and phosphor means formed in at least one layer carried on said second layer.

4,379,982

LOW ENERGY STARTING AID FOR HIGH INTENSITY DISCHARGE LAMPS

Joseph M. Proud, Wellesley, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Continuation of Ser. No. 193,786, Oct. 2, 1980, abandoned. This application Feb. 4, 1982, Ser. No. 345,866
Int. Cl.³ H01J *7/44, 17/34, 19/78, 29/96*
U.S. Cl. 315—73 2 Claims



1. A light source comprising:

a high pressure discharge lamp including a discharge tube having first and second electrodes sealed therein at opposite ends for receiving ac power and enclosing a fill material which emits light during discharge;

pulse generating means operative to provide at an output thereof a high voltage, short duration pulse of predetermined energy; and

a conductor including a generally straight portion extending from a region proximate to one of said electrodes towards a region proximate to the other of said electrodes coupled to said output of said pulse generating means and disposed in close proximity to an outer surface of said discharge tube for providing within said discharge tube an ionization path between said electrodes when said conductor is energized by said pulse generating means at which time said first electrode is at a first voltage potential, said second electrode is at a second voltage potential, and said conductor is at a third voltage potential higher than said first and second potential, wherein:

said high pressure discharge lamp is a high pressure sodium discharge lamp;

said fill material contains approximately 200 torr xenon pressure; and

said pulse generator means provides a pulse of approximately 25 kilovolts for a duration of approximately 10 nanoseconds of approximately 10 millijoules energy.

4,379,983

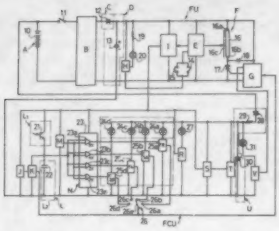
ELECTRIC FLASH DEVICE

Yoshiyuki Takematsu, Tokyo, Japan, assignor to Fuji Koeki Corporation, Tokyo, Japan

Filed Mar. 2, 1981, Ser. No. 239,619
Claims priority, application Japan, May 26, 1980, 55-69874
Int. Cl.³ H05B *41/32*
U.S. Cl. 315—151 14 Claims

1. An electronic flash device comprising, in combination, a flash unit having electric power supply means including a direct current voltage power source, means for boosting voltage of said direct current power source and for storing electric energy, flash light generating member including a flash tube generating flash light, trigger signal generating means triggering said flash light generating member, and means for stopping flash of said flash light generating member when flash light quantity of said flash light attains to a predetermined value, and a flash control unit having light receiving means for receiving a reflecting light which is produced from said flash tube and is reflected from an object to be photographed, flash light quan-

tity detecting means for detecting flash light quantity of said flash light generated from the flash tube by means of comparing an electric value obtained by integrating output of said light receiving means with reference voltage, means for indi-



cating light exposure quantity in response to a plurality of outputs of said flash light quantity detecting means, and flash light quantity control means for controlling said flash light quantity of said flash light.

4,379,984

BRUSHLESS DC MOTOR DRIVEN BY COMPLEMENTARY TYPE TRANSISTORS

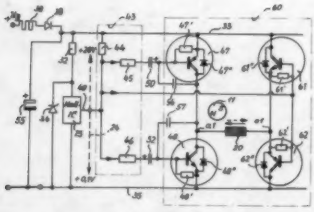
Rolf Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH & Co. KG, St. Georgen, Fed. Rep. of Germany

Filed Apr. 1, 1981, Ser. No. 250,011

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022836

Int. Cl.³ H02K *29/00*

U.S. Cl. 318—254 10 Claims



1. A brushless d.c. motor having a rotor, a stationary motor winding (20), a rotor position sensor (25) and means, including a full bridge circuit, for providing to said winding from a d.c. current source (33,35), under control of said sensor, two current pulses per 360° el. of rotation of said rotor and further comprising, in accordance with the invention:

two transistors (47,48) of opposite conductivity type connected in series providing a first pair of adjacent arms of said bridge circuit and having their emitters respectively connected to opposite poles of said d.c. current source and having their collectors connected together and to a first terminal of said motor winding;

two transistors (61,62) of opposite conductivity type connected in series providing a second pair of adjacent arms of said bridge circuit, having their respective collectors connected to said opposite poles of said d.c. current source and having their emitters connected together and to a second terminal of said motor winding;

means, constituted at least in part by said sensor (25) and including semiconductor means, for producing a rotor position signal of large amplitude, a potential being supplied to said semiconductor means which is substantially equal to that of one pole (35) of said d.c. current source (33,35), and

means for applying said rotor position signal (24) of large amplitude to the control electrodes of said transistors (47,48) providing said first pair of adjacent bridge arms through a resistance network (43;72) having a first resistance (46,75) connected between the output of said semiconductor means (25;70) and the control electrode of a first one (48) of said transistors of said first pair and a second resistance (44,73) connected between said output of said semiconductor means (25;70) and the control electrode of the second one (47) of said transistors of said first pair.

4,379,985

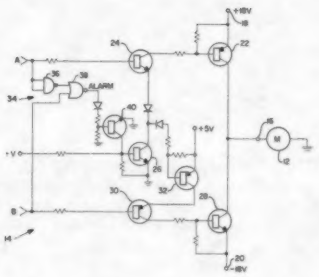
BIPOLAR DRIVER WITH ILLEGAL CODE DETECTOR

Vincent G. Coppola, Branford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 260,465, May 4, 1981, which is a continuation of Ser. No. 49,241, Jun. 18, 1979. This application May 14, 1982, Ser. No. 378,371

Int. Cl.³ H02P *1/22*

U.S. Cl. 318—293 12 Claims



1. An interface for a processor, a reversible polarity load having two terminals the first of which terminals being tied to a substantially fixed reference level, and a pair of opposite polarity power supplies, the processor selectively transmitting one of several possible command signal codes to the interface, the signal codes designating different modes of operation of the load, the interface comprising:

a first power switch means, the first power switch means selectively interconnecting the second of said terminals of the load and the power supply of one polarity,

a second power switch means, the second switch means selectively interconnecting the second of said terminals and the power supply of opposite polarity,

means receiving each signal code and

(a) in response to a first signal code, forward biasing the first power switch means to interconnect the second of said terminals and the power supply of one polarity and reverse biasing the second power switch means such that the second of said terminals is not interconnected with the power supply of the opposite polarity,

(b) in response to a second signal code, reversing the first power switch means such that the second of said terminals is not interconnected to the power supply of one polarity and forward biasing the second power, switch means to interconnect the second of said terminals and the power supply of the opposite polarity, and

(c) in response to a third signal code, reverse biasing both power switch means such that the second of said terminals is not connected with either power supply,

the interface further comprising illegal signal code inhibit means, the inhibit means including monitoring means receiving the signal codes and in response to an invalid

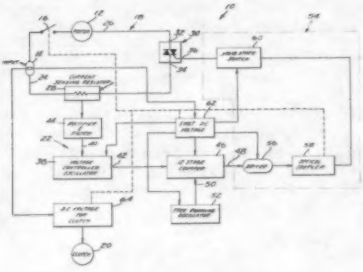
signal code which would otherwise function to forward bias both power switch means, inhibiting the operation of both of said power switch means.

4,379,986

STALL SENSING CIRCUIT FOR SHADED POLE MOTORS

Donald J. Baxter, Simpsonville, and Hugh L. Childress, Jr., Gray Court, both of S.C., assignors to Marquette Metal Products Co., Fountain Inn, S.C.

Filed Aug. 24, 1981, Ser. No. 295,655
Int. Cl.³ H02H *7/085*
U.S. Cl. 318—434 **9 Claims**



1. A motor control circuit for automatically uncoupling its motor's power supply during a stall condition while maintaining it coupled in its running condition comprising:

power supply coupling means;

motor connecting means;

signal sensing means for providing an output sensing signal, the magnitude of which is a function of the condition of the motor's load;

switching means having a conduction and non-conduction state and having an output, input and control terminal, the output and input terminals connected in series with said power supply coupling means, motor connecting means and signal sensing means, responsive to the magnitude of a control signal applied to its control terminal to control its state;

controlled oscillator means, having an input and output, coupled at its input to said signal sensing means, for generating an output signal the frequency of which is a function of the magnitude of the sensing signal;

counting means having an input, output and reset terminal, for providing a control signal at its output in response to a predetermined count and for resetting said counting means when a reset signal is applied to said reset terminal, the input of said counting means being coupled to the output of said controlled oscillator means;

resetting means, coupled to said counting means; reset terminal, for providing a reset signal to said reset terminal prior to and after said predetermined count in response to the output signals generated during running condition and stall condition respectively; and

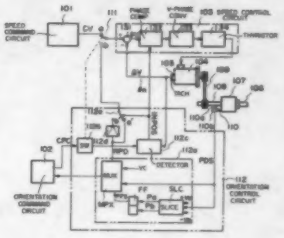
coupling means, connected to the output of said counting means and to the control terminal of said switching means, for transmitting a control signal from said counting means for changing said switching means' state.

4,379,987

SPINDLE ROTATION CONTROL SYSTEM

Yoshinori Kohzai, and Yoshiki Fujioka, both of Hino, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Sep. 25, 1980, Ser. No. 190,659
Claims priority, application Japan, Oct. 9, 1979, 54-130153
Int. Cl.³ G05B *13/00*
U.S. Cl. 318—561 **8 Claims**



1. A system for controlling the rotation of a spindle, comprising:

means for providing an orientation command signal;

a motor;

speed detecting means, operatively connected to said motor, for detecting the speed of said motor and for generating a signal representing the actual speed of said motor;

a speed control circuit, operatively connected to said speed detecting means and said motor, for controlling said motor so as to narrow to zero a deviation between the actual speed thereof and a commanded speed;

a spindle driven by said motor; and

a position control circuit, operatively connected to said spindle and said speed control circuit, for generating a position deviation signal on the basis of a commanded stopping position and the rotational position of said spindle;

said spindle being rotated at a commanded speed by said motor under the control of said speed control circuit, and rotationally controlled by the orientation command signal so as to make the position deviation signal zero;

said position control circuit including a proximity switch, mounted on said spindle, for detecting the present rotational position of said spindle, for generating a detection signal having a value of zero volts when a predetermined point on said spindle has reached a commanded stopping position, and for generating either a positive or negative value depending upon whether the specified point on said spindle is immediately to the left or right of the commanded stopping position, said position control circuit generating the position deviation signal in dependence upon the detection signal.

4,379,988

MOLDED HEARING AID AND BATTERY CHARGER

Patricio Mattatall, P.O. Box 910, Winter Park, Fla. 32789

Filed Jan. 19, 1981, Ser. No. 226,212
Int. Cl.³ H02J *7/02;* **H04R** *25/02*
U.S. Cl. 320—4 **6 Claims**

1. A self-contained hearing aid insertable in the ear of the user and having a rechargeable battery, the battery charging system comprising:

oscillator means for producing electrical oscillations;

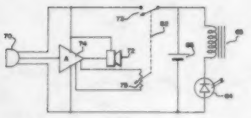
a first inductor associated with said oscillator means for producing an inductive magnetic field from said electrical oscillations;

holding means for supporting said hearing aid for charging said rechargeable battery;

a second inductor disposed within said hearing aid, said holding means supporting said hearing aid in a manner to

inductively couple said first inductor and said second inductor whereby an electromotive force is induced in said second inductor; and

a light emitting diode disposed in said hearing aid and visible externally thereto, said diode connected in series with said second inductor, the series combination of said diode and said second inductor connected in parallel with said battery, whereby said electromotive force induced in said



second inductor causing said diode to produce a pulsating direct current flowing in the direction to charge said battery and to emit a light external to said hearing aid to indicate such flow of charging current, said hearing aid position adjustable within said holding means by the user to maximize the degree of inductive coupling between said first and second inductors, said light emitting diode functioning to indicate said degree of coupling by the intensity of emitted light therefrom.

4,379,989

SYSTEM FOR PREVENTING DAMAGE TO A BATTERY CHARGER DUE TO APPLICATION OF A BATTERY WITH WRONG POLARITY

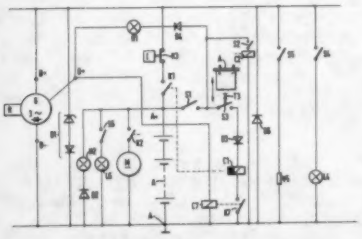
Wolfgang Kurz, Hemmingen, and Rainer Leunig, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 6, 1980, Ser. No. 147,300

Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2919021; May 11, 1979, 2919022

Int. Cl.[3] H02J *7/00*

U.S. Cl. 320—26 12 Claims



1. In an automotive electrical system including

an alternator having an exciter winding, exciter diodes connected to said exciter winding, a positive exciter terminal (D+), a positive rectified alternator output terminal (B+), and a negative rectified alternator terminal (B−), connected to a reference potential,

a battery (B) having a negative terminal (A−) connected to said reference potential and a positive terminal (A+);

a starter motor (M);

and starter switch means (S2, C2, K2) connected to said battery so that said motor is started upon activation of said starter switch means independent of the polarity of said battery,

apparatus for protecting said system from application of a voltage having a polarity opposite the polarity of said battery comprising

a control switch S1;

a protective diode (D3) conductive only when the polarity of the DC voltage is of the predetermined polarity of said battery,

switch means including a relay (C1, K1) comprising a relay coil (C) connected in series with said protective diode and the control switch (S1) and a pair of relay contacts (K1) operative on the control of said relay coil and connected in series with the terminals (A+, A−) of said battery;

the relay coil being connected to said system and to said blocking diode for connection of DC voltage to, and disconnection of DC from said system when said blocking diode is, respectively, conductive or non-conductive with respect to said polarity of the battery;

and further comprising an auxiliary relay (C7, K7) having a coil connected between said positive exciter terminal (D+) and said reference potential (B−, A−),

and a pair of auxiliary relay contacts (K7) connected in series with the relay coil (C1) of said first relay (C1, K1).

4,379,990

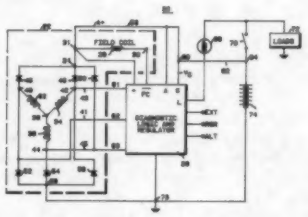
FAULT DETECTION AND DIAGNOSTIC SYSTEM FOR AUTOMOTIVE BATTERY CHARGING SYSTEMS

Kirk A. Sievers, Roselle, and Robert W. Mortonson, Addison, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed May 22, 1980, Ser. No. 152,225

Int. Cl.[3] G01R *31/02;* G08B *21/00;* H02J *7/24*

U.S. Cl. 322—99 36 Claims



1. An in situ self-diagnostic automotive alternator-battery charging system comprising:

a battery;

voltage regulator means sensing battery voltage and generating an excitation signal in response thereto;

alternator means coupled to said battery and said voltage regulator means, driven by a vehicle engine, providing a rectified electrical signal for charging said battery in response to said excitation signal;

a plurality of electronic circuit status detectors, each of said plurality maintaining a first logic state when a corresponding electrical signal characteristic is within a predetermined range and a second logic state when said electrical signal characteristic is outside said predetermined range, selected ones of said plurality being coupled to said battery, voltage regulator means and said alternator means with at least one of said electronic circuit status detectors including resettable timing means establishing time intervals for the detection of repetitive occurrences of pulse signals; and

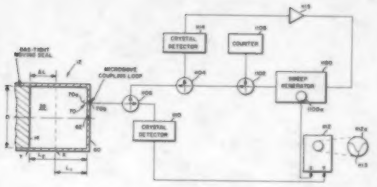
logic means coupled to said plurality of circuit status detectors and responsive to the logic output states of said circuit status detectors, identifying predetermined sequences of logic states thereby to identify the occurrence of faults in said charging system.

4,379,991

APPARATUS FOR ACCURATELY MEASURING THE VOLUME OF A METER PROVER

William W. Ho, and William F. Hall, both of Thousand Oaks, Calif., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Mar. 28, 1980, Ser. No. 135,191
Int. Cl.³ G01R 27/04; G01F 17/00
U.S. Cl. 324—58.5 C 13 Claims



1. Apparatus for measuring with a high degree of accuracy the volume of a chamber of a meter prover, said chamber having the regular geometry of a right circular cylinder, the volume of said right circular cylinder being defined its diameter and length, said measuring apparatus comprising;

(a) antenna means disposed for generating electromagnetic energy into and for receiving electromagnetic energy reflected from said chamber;

(b) generating means coupled to said antenna means for generating first and second resonant modes of selected electromagnetic energy fields, each of said first and second modes having an electromagnetic energy field whose electric and magnetic component fields are uniquely related to said diameter and said length of said right circular cylinder;

(c) means coupled to said antenna means for detecting the electromagnetic energy reflected from said right circular cylinder;

(d) resonant condition detecting means coupled to said energy detecting means for providing first and second indications of the occurrences of the minimum levels of the reflected electromagnetic energy corresponding to the establishment of a standing wave resonant condition within said right circular cylinder for each of said first and second resonant modes; and

(e) means coupled to said generating means for detecting first and second frequencies at which said standing wave resonant conditions are established within said right circular cylinder, said first and second frequencies being a function of the volume of said right circular cylinder whereby said volume is defined with the high degree of accuracy.

4,379,992

PRINTED CIRCUIT BOARD ELECTRONIC TESTER

Donald J. Geisel, Madison, N.Y., assignor to General Electric Company, Utica, N.Y.

Continuation of Ser. No. 103,972, Dec. 17, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 280,671
Int. Cl.³ G01R 31/02
U.S. Cl. 324—158 F 6 Claims

1. An automated testing apparatus for performing shorts and continuity tests on a printed circuit board or ceramic substrate submerged in an ionic conducting solution comprising:

(a) a bath composed of an ionic conducting solution;

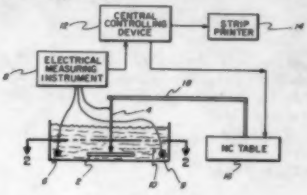
(b) an electrically insulated movable probe positioned within said bath and having its tip in electrical contact with one point on said printed circuit board;

(c) at least one reference electrode positioned within said bath;

(d) an electrical measuring instrument capable of measuring electrical characteristics, said instrument having a first lead connected to said movable probe and a second lead connected to one of said reference electrodes;

(e) a controlled table;

(f) a support means connected between said controlled table and said movable probe;



(g) a central controlling device receiving values of electrical characteristics measured by said electrical measuring instrument and outputting control information to said controlled table; and

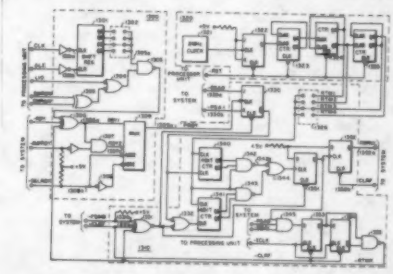
(h) means responsive to record data generated by said central controlling device.

4,379,993

PULSE FAILURE MONITOR CIRCUIT EMPLOYING SELECTABLE FREQUENCY REFERENCE CLOCK AND COUNTER PAIR TO VARY TIME PERIOD OF PULSE FAILURE INDICATION

James R. Holden, Chicago, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Dec. 29, 1980, Ser. No. 220,932
Int. Cl.³ H03K 13/32, 17/296
U.S. Cl. 328—120 14 Claims



1. A pulse monitor circuit for use in a switching system, said pulse monitor circuit comprising:

a first source of pulses;

a second source of pulses;

input storage means connected to said first pulse source operated in response to each of a first group of alternately occurring pulses to generate a first clear signal, said input storage means further operated in response to each of a second group of alternately occurring pulses from said first pulse source to generate a second clear signal;

a first counter circuit connected to said input storage means and said second pulse source, operated in response to an absence of said first clear signal to count pulses from said second pulse source;

a second counter circuit connected to said input storage means and said second pulse source, operated in response to an absence of said second clear signal to count pulses from said second pulse source;

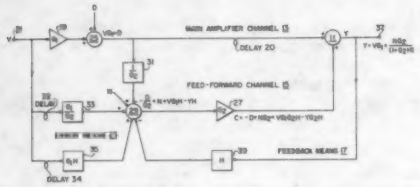
output storage means connected to said first and second counter circuits, operated in response to a predetermined count from said first or second counter circuits to generate a pulse failure signal; and

third pulsing means connected to said output storage means, operated in response to said pulse failure signal to generate a toggle pulse; said output storage means further operated in response to said toggle pulse to prevent generation of said pulse failure signal.

4,379,994
FEED-FORWARD AMPLIFIER

Ronald M. Bauman, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 16, 1981, Ser. No. 244,175
Int. Cl.³ H03F *1/26*
U.S. Cl. 330—149 **10 Claims**



1. A feed-forward-compensated amplifier comprising:

a main amplifier channel including a main amplifier for receiving an input signal and producing an amplified signal therefrom;

a feed-forward channel including error means connected to the input and the output of the main amplifier for producing an error signal which is a function of the error introduced into the amplified input signal by the main amplifier, and a subsidiary amplifier connected to the error means for receiving the error signal and producing a correction signal therefrom;

first coupling means for coupling a plurality of inputs together in algebraic summing relationship,

the output of the feed-forward channel and the output of the main amplifier channel being connected as inputs to the first coupling means so that the correction signal is summed with the amplified signal to produce a feed-forward-compensated output signal; and

feedback means connected to the output of the first coupling means for returning a fraction of the output signal to the input of the subsidiary amplifier,

whereby an output signal is obtained which is substantially free of error caused by both the main and the subsidiary amplifiers.

4,379,995
GAIN CONTROLLED AMPLIFIER

Hisashi Yamada, Yokohama, and Tsutomu Sugawara, Yokosuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 16, 1980, Ser. No. 187,490
Claims priority, application Japan, Sep. 21, 1979, 54-121865
Int. Cl.³ H03F *3/45*; H03G *3/10*
U.S. Cl. 330—254 **11 Claims**

1. A gain controlled amplifier comprising:

(a) first means for separately providing a first current corresponding to the positive component of an input signal and a second current corresponding to the negative component of said input signal;

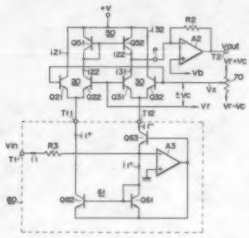
(b) second means connected to said first means for providing a first attenuated current corresponding to said first current;

(c) third means connected to said first means for providing a second attenuated current corresponding to said second current;

(d) fourth means connected to said second and third means for providing a control signal for changing magnitude of said first and second attenuated currents;

(e) fifth means connected to said second and third means for providing an output signal corresponding to said first and second attenuated current;

(f) sixth means coupled to said first, second and third means, said sixth means being responsive to a third current which

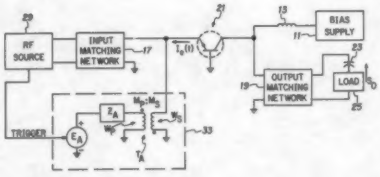


corresponds to a difference between said first current and said first attenuated current, and said sixth means also being responsive to a fourth current which corresponds to a difference between said second current and said second attenuated current, said sixth means providing said first means with an input current corresponding to said input signal.

4,379,996
ENHANCEMENT OF CLASS C OPERATION OF BIPOLAR JUNCTION TRANSISTOR

Robert J. Weber, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 13, 1981, Ser. No. 234,132
Int. Cl.³ H03F *1/00*
U.S. Cl. 330—296 **15 Claims**



1. A circuit comprising a class C biased BJT which is for outputting RF bursts, and means for controlling the shape of the envelope of said RF burst, said shape controlling means comprising:

first means comprising a transformer having a primary winding with M_P turns and a secondary winding with M_S turns where $M_P:M_S > 1$, said secondary winding being connected in the BJT emitter current path,

pulse source second means, connected to the primary winding, for providing pulses having predetermined parameters,

impedance third means connected to the primary winding,

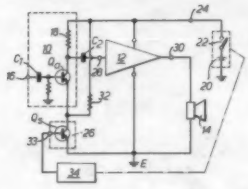
said first, second, and third means cooperating to control the BJT emitter current and cause the BJT emitter current envelope to substantially conform to a predetermined function of time $I_e(t)$, where $I_e(t)$ is a pulse waveform.

4,379,997

POWER AMPLIFIER

Minoru Ooishi, Yokohamashi; Teruji Mochizuki, Fujisawashi, and Yutaka Suzuki, Yokohamashi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 5, 1981, Ser. No. 222,739
Claims priority, application Japan, Feb. 8, 1980, 55-14343
Int. Cl.[3] H03F *3/04*
U.S. Cl. 330—298 12 Claims



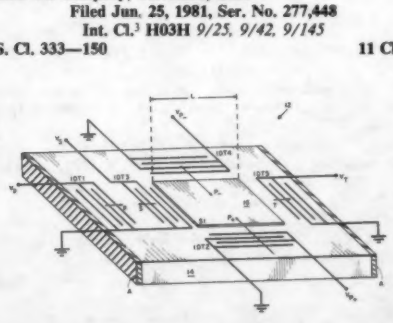
1. A power amplifier comprising:
an input circuit means;
a power supply having first and second power source terminals;
a preamplifying stage having at least one transistor with first, second and third electrodes, said first electrode being connected to said input circuit means;
a resistance load, said second electrode being connected to said first power source terminal through said resistance load, and said third electrode being connected to said second power source terminal;
a power amplifying stage connected at its input to said second electrode of said at least one transistor;
an electrode switch means connected between said third electrode of said at least one transistor and said second power source terminal, and having a control terminal;
resistance means connected between said third electrode of said at least one transistor and said first power source terminal, in parallel with said at least one transistor and said resistance load; and
control circuit means connected to said control terminal of said electronic switch means for applying a muting signal to said electronic switch means in the event excessive input signals are applied to the power amplifier or overloading occurs to prevent damage to the power amplifier.

4,379,998

ACOUSTIC DEGENERATE FOUR-WAVE MIXING PHASE-CONJUGATE REFLECTOR

Richard C. Shockley, San Diego, Calif., assignor to The Standard Oil Company, Cleveland, Ohio

Filed Jun. 25, 1981, Ser. No. 277,448
Int. Cl.[3] H03H *9/25, 9/42, 9/145*
U.S. Cl. 333—150 11 Claims



1. An acoustic surface wave device comprising:
a piezoelectric substrate for propagating acoustic waves;
a first transducer disposed on said substrate for receiving a modulated input signal having a carrier center frequency f_1 and for converting said input signal to an input acoustic wave;
a second transducer colinearly aligned with said first transducer;
a semiconductor material disposed over said piezoelectric substrate and having a dimension L colinear with said first and second transducers and defining a nonlinear acoustic wave interaction region;
means for generating an acoustic standing wave having a frequency f_1 in said nonlinear interaction region whereby said input acoustic wave interacts with said standing wave in said nonlinear interaction region to create an output signal on said second transducer that is the phase conjugate of said modulated input signal.

4,379,999

ELECTROSTATIC SHIELD FOR A TRANSFORMER

Minoru Kimura, Nishinomiya, and Teruo Ina, Takarazuka, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 30, 1981, Ser. No. 316,905
Claims priority, application Japan, Nov. 5, 1980, 55/158679[U]
Int. Cl.[3] H01F *15/04*
U.S. Cl. 336—84 C 6 Claims

1. An electrostatic field for an electrical transformer coil comprising a substantially ring shaped inner insulator, a field concentration relaxation conductor formed by winding a conductive foil into a sheet forming a layer completely surrounding the inner insulator, and a multiple outer insulation layer surrounding the field concentration relaxation conductor, said multiple outer insulation layer comprising at least one layer of polyethylene terephthalate film and at least one mica insulation layer.

4,380,000

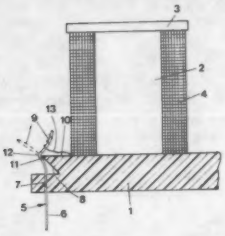
COIL ARRANGEMENT, PARTICULARLY FOR RELAYS, AND METHOD OF MAKING SAME

Holger Nicolaisen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Nov. 6, 1981, Ser. No. 318,833
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043148
Int. Cl.[3] H01F *15/10*
U.S. Cl. 336—192 2 Claims

1. A coil assembly for a relay or the like, comprising, a base plate having first and second sides, a cylindrically shaped coil mounted on said first side of said base plate in normal relations thereto, said coil having a coil wire end portion, said base plate having a notch radially displaced from said coil forming with said base plate second side a protruding portion and having an

obliquely extending face which intersects said base plate first side to form a lip portion, a normally extending hole in said protruding portion having a locus which intersects said



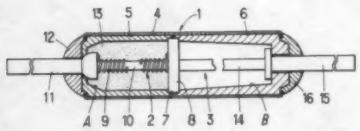
obliquely extending face, a terminal pin in said hole and bent around said lip portion in the direction of said coil, and said coil wire end portion being connected to said terminal pin.

4,380,001

ELECTRIC SAFETY DEVICE

Mikizo Kasamatsu, No. 22-7, Korikitano-cho, Neyagawa-shi, Osaka-fu, Japan

Filed Jul. 7, 1981, Ser. No. 281,244
Int. Cl.³ H01H *85/00*
U.S. Cl. 337—4 **2 Claims**



1. An electrical safety device comprising:

a housing;

an electrically conducting wall member located within said housing and dividing said housing into first and second chambers;

a first electrical lead wire penetrating said housing, said first electrical lead wire having an outer end outside of said housing for connection in an electrical circuit and having an inner end in said first chamber for connection to a first fuse element;

a second electrical lead wire penetrating said housing, said second electrical lead wire having an outer end outside of said housing for connection in an electrical circuit, and having an inner end in said second chamber for connection to a second fuse element;

a first fuse element adapted to break an electrical circuit on passage of an overcurrent, said first fuse element being provided in said first chamber and comprising an electrically conducting element electrically connected in series between said inner end of said first electrical lead wire and said electrically conducting wall member; and

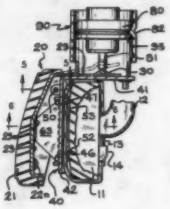
a second fuse element adapted to break an electrical circuit on being heated above a predetermined temperature, said second fuse element comprising an electrically conducting solder metallic wire, the surface of which is coated with pine resin, said solder wire being electrically connected in series between said inner end of said second electrical lead wire and said electrically conducting wall member.

4,380,002

SECONDARY BRAKE PEDAL ASSEMBLY

Daniel L. Neill, Belleville, and Paul Weiner, Pinckney, both of Mich., assignors to Kelsey-Hayes Co., Romulus, Mich.

Filed Nov. 28, 1979, Ser. No. 98,102
Int. Cl.³ H01C *10/00*
U.S. Cl. 338—153 **6 Claims**



1. A brake pedal transducer assembly adapted for securement to a primary brake pedal to translate foot-applied pressure necessary to achieve a given primary braking pressure for a towing vehicle to an electric signal yieldative of a corresponding electric brake force for a towed vehicle, said assembly comprising:

(1) a base plate having a lower surface abutting the tread surface of a primary brake pedal and being securable to said primary brake pedal, said plate including an integral ear portion extending downwardly behind said primary brake pedal,

(2) a pedal member hingedly connected to said base plate, said hinged connection allowing relative pivotal movement as between said pedal member and said base plate, said pedal member including a generally upper tread surface for receiving foot-applied pressure and an integral lever arm projecting downwardly with respect to said tread surface,

(3) spring means situated between said base plate and pedal member and serving to resist pivotal movement of said pedal member toward said base plate and, in turn, a corresponding movement of said lever arm,

(4) a housing mounted on said base plate ear portion and extending rearwardly thereof, said housing being constructed and arranged to accommodate said lever arm and

(5) potentiometer means mounted within said housing, said potentiometer including a plunger preselectively positioned for axial movement responsive to contacting deflection of said lever arm.

4,380,003

RESISTOR DEVICE AND GENERATOR FOR CAR CHARGER

Yoshiyuki Iwaki, and Hitoshi Goto, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1980, Ser. No. 183,636
Claims priority, application Japan, Sep. 3, 1979, 54-113409; Sep. 14, 1979, 54-127957
Int. Cl.³ H01C *1/01*
U.S. Cl. 338—315 **6 Claims**

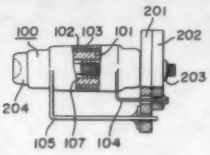
1. A spacer type resistor device for mounting on a printed circuit board and a fixing plate comprising:

at least one insulating substrate having a throughhole formed therein;

a resistance layer formed on the outer surface of each of said at least one insulating substrate;

first and second electrode layers positioned adjacent opposite axial end surfaces of said at least one insulating substrate and contacting said resistance layer; and

means disposed within said throughhole for securing said at least one insulating substrate to said board and said plate



and contacting one of said first and second electrode layers.

4,380,004

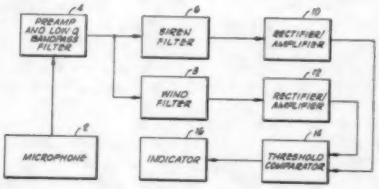
EMERGENCY SOUND DETECTOR DEVICE

Montgomery R. Coats, 2821 Blue Spruce Rd., and Gwen V. Janssen, 1725 Kings Rd., both of Edmond, Okla. 73034

Filed Mar. 19, 1981, Ser. No. 245,593

Int. Cl.³ G08G *1/00*; G01S *7/40*

U.S. Cl. 340—34 **27 Claims**



1. An apparatus for detecting a warning sound emitted by an emergency vehicle or the like, comprising:

first monitor means for monitoring a first predetermined range of frequencies including at least a portion of the spectrum of frequencies of the emitted warning sound;

second monitor means for monitoring a second predetermined range of frequencies, the frequencies of the second predetermined range of frequencies being lower than the frequencies of the first predetermined range of frequencies;

comparator means for comparing a first magnitude derived from an electrical signal detected to have a frequency within the first predetermined range of frequencies monitored by said first monitor means with a second magnitude derived from an electrical signal detected to have a frequency within the second predetermined range of frequencies monitored by said second monitoring means; and

indicator means, responsive to said comparator means, for indicating when the first magnitude is greater than the second magnitude.

4,380,005

DYNAMIC ZERO OFFSET COMPENSATING CIRCUIT FOR A/D CONVERTER

Pierre Debord, Vence, and Jean-Louis Marijon, Le Bar-sur-Loup, both of France, assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 912,123, Jun. 2, 1978, Pat. No. 4,251,803. This application Apr. 11, 1980, Ser. No. 139,329

Claims priority, application France, Jun. 30, 1977, 77 20730

The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.

Int. Cl.³ H03K *13/02*

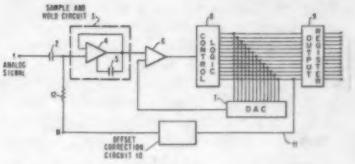
U.S. Cl. 340—347 AD **2 Claims**

1. In an analog device having at least one input and one output and receiving an analog signal with a zero mean value on said input and supplying a signal with a determined relationship with respect to the input signal on its output, an improved compensation circuit for continuously compensating for the zero offset level introduced into the output signal by the device, comprising:

means for comparing the level of the output signal with the offset zero level and supplying the sign of the output signal with respect to the offset zero level, said sign being positive if the output signal level exceeds that of the offset zero level and negative if the output signal level is less than the offset zero level;

a storing capacitor having a first terminal M and a second terminal connected to ground;

charging means for applying a charge current +I to terminal M when the sign of the output signal is negative;



discharging means for applying a discharge current −I to terminal M when the sign of the output signal is positive; and

means for continuously adding the voltage generated at terminal M in response to the charge and discharge of said storing capacitor to the input signal;

and wherein said charging and discharging means include two current sources for supplying currents having the magnitude and sign, respectively, of 2I and −I and which are series-connected between two positive and negative voltage supplies, respectively, having their common point connected to terminal M of said capacitor, said two supplies being always switched on, and

steering means for steering 2I to ground when the sign of the output signal is positive.

4,380,006

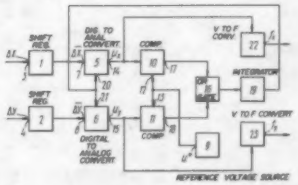
LINEAR INTERPOLATOR

Vladimir S. Borisov, ulitsa Lugovaya, 35/37, kv. 9, and Vyacheslav V. Korovin, ulitsa Shekhurdina, 60, kv. 30, both of Saratov, U.S.S.R.

Filed Jun. 8, 1981, Ser. No. 271,649

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 CC **1 Claim**



1. A linear interpolator to provide for conversion of codes representing X- and Y-axis increments obtainable from an external data source to corresponding trains of pulses applied to control circuits of first and second actuation means comprising:

a code digital normalization unit; shift registers of said unit; an input and an output of each of said shift register; said inputs of said shift registers connected to said external data source;

first and second digital-to-analog converters to convert

digital data to analog voltage each having a first input, a second input, and an output, said second inputs being joined together;

respective ones of said inputs of said digital-to-analog converters connected to said outputs of said shift registers of said code digital normalization unit;

an adjustable reference voltage source having an output;

first and second comparators to compare output voltages from said digital-to-analog converters to a reference voltage each having a first input, a second input, and an output;

said first inputs of said comparators joined together and connected to said output of said adjustable reference voltage source;

said second inputs of said comparators connected respectively to said outputs of said digital-to-analog converters;

an OR gate having a first input, a second input and an output, said first and second inputs being connected to said second joined inputs of said digital-to-analog converters producing reference voltages;

an X-axis voltage-to-frequency converter to convert analog voltage to trains of output control pulses having an input and an output which are connected respectively to the output of said first digital-to-analog converter and the control circuit of said first actuation means;

an Y-axis voltage-to-frequency converter having an input and an output which are connected respectively to the output of said second digital-to-analog converter and the control circuit of said second actuation means.

4,380,007

PROXIMITY SWITCH

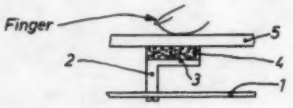
Walther Steinegger, Schaffhausen, Switzerland, assignor to Playmont AG, Switzerland

Filed May 27, 1981, Ser. No. 267,819

Claims priority, application Switzerland, May 27, 1980, 4106/80

Int. Cl.³ G08C *9/02*

U.S. Cl. 340—365 C **6 Claims**



1. Proximity switch actuated by an alternating electrical field comprising

a circuit-carrying base plate;

at least one capacitively actuatable sensor protruding from said circuit-carrying base plate;

said sensor including

a metallic support having a surface facing away from said base plate,

a layer of electrically conductive foamed material lining said surface of said metallic support.

4,380,008

METHOD OF DRIVING A MATRIX TYPE PHASE TRANSITION LIQUID CRYSTAL DISPLAY DEVICE TO OBTAIN A HOLDING EFFECT AND IMPROVED RESPONSE TIME FOR THE ERASING OPERATION

Hideaki Kawakami, Mito; Masaaki Kitazima, Hitachi; Naoyuki Izaki, Hitachi, and Yoshiharu Nagae, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 1, 1979, Ser. No. 80,201

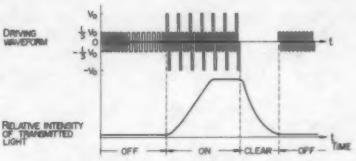
Claims priority, application Japan, Sep. 29, 1978, 53-119374; Oct. 18, 1978, 53-127376

Int. Cl.³ G09G *3/36*

U.S. Cl. 340—784 **6 Claims**

1. An amplitude selective multiplexing method of driving a matrix type liquid crystal display device which includes a layer of guest-host type phase transition liquid crystal sandwiched between a pair of electrode groups including at least one transparent electrode group and arranged in the form of a matrix, intersecting portions of said electrode groups being employed as display segments for displaying information by driving column or row electrodes of said matrix electrode groups with a one-line-at-a-time scanning system, wherein said phase transition liquid crystal exhibits a hysteresis characteristic in the relative brightness thereof against root mean square values of applied voltage, said amplitude selective multiplexing matrix driving method comprising:

scanning said segments and applying across them a write-in voltage when the segments are to be changed from an off state to an on state, an erasing voltage when the segments are to be changed from the on state to the off state, and a holding voltage when a present on or off state of each of the segments is to be maintained; and



applying a holding voltage across each of segments other than segments just subjected to scanning to maintain the present on or off state of the segments,

wherein said write-in voltage has a root mean square value sufficient for effecting such a phase transition of said phase transition liquid crystal from a low brightness to a high brightness condition thereby to turn on said display device, said holding voltage has a root mean square value lower than said write-in voltage and not sufficient for effecting the phase transition of said phase transition liquid crystal thereby to hold the present brightness of said display device at the level it is at at the moment the holding voltage is applied, and said erasing voltage has a root mean square value lower than said holding voltage and sufficient for effecting such a phase transition of said phase transition liquid crystals from the high brightness to the low brightness condition thereby to turn off said display devices.

4,380,009

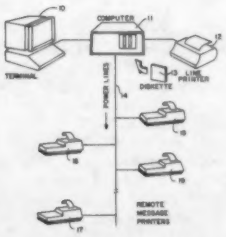
MESSAGE COMMUNICATION SYSTEM

Ernest L. Long, San Jose; William S. Duvall, Portola Valley, and Donald P. Allen, Menlo Park, all of Calif., assignors to Amtel Systems Corporation, Sunnyvale, Calif.

Filed Feb. 29, 1980, Ser. No. 125,844

Int. Cl.³ H04L *15/34*; H04Q *9/00*

U.S. Cl. 340—825.55 **41 Claims**



1. In an office complex, a message communication system comprising:

means for generating an analog carrier signal,

means for modulating said analog carrier signal with a digital message signal such that said digital message signal is phase coherent with said analog carrier signal, said digital message signal including information identifying a unique address or set of unique addresses of one or more of the plurality of remote locations,

means for transmitting said message signal from a first central location over an office power line to a group of remote locations, and

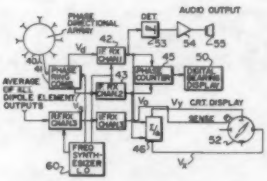
message display means each having one or more unique destination address means corresponding to said specified information and responsive to said transmitted message signal for displaying said message.

4,380,010

PHASE DIRECTIONAL ANTENNA ARRAY AND PHASED RING COMBINER FOR RADIO DIRECTION FINDING

Zdzislaw A. A. Krajewski, Ajax, Canada, assignor to Bayly Engineering Limited, Ajax, Canada

Filed Sep. 9, 1980, Ser. No. 186,016
Claims priority, application Canada, Sep. 12, 1979, 335462
Int. Cl.³ G01S *3/06*
U.S. Cl. 343—113 R **9 Claims**



1. A radio direction finding system for determining the relative bearing angle θ of an incoming signal comprising a circular array of an even number of vertical dipoles arranged in diametrically opposed pairs equally spaced apart around the array, each dipole pair having an output feeding two branches, one branch electrically advancing the phase of a signal from each dipole pair by an amount equivalent to the angular displacement in one direction of each dipole pair with respect to a reference direction established by a reference dipole pair and the other branch retarding the phase of a signal from each dipole pair by an amount equivalent to said angular displacement, means for combining all the phase advanced signals to form a signal voltage V_d which is retarded in phase by an angle θ corresponding to said relative bearing, means for combining all the phase retarded signals to form a signal voltage V_s which is advanced in phase by said angle θ, and means for measuring the phase difference (2θ) between V_d and V_s whereby θ is obtainable by dividing said phase difference by 2.

4,380,011

LOOP ANTENNA ARRANGEMENT FOR INCLUSION IN A TELEVISION RECEIVER

Rafael Torres, Plainsboro, and Oakley M. Woodward, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 25, 1980, Ser. No. 210,249
Int. Cl.³ H01Q *1/24*
U.S. Cl. 343—702 **27 Claims**

1. An antenna arrangement for inclusion within a television receiver having a tuner, and responsive to signals in selected frequency bands comprising:

a cabinet for said television receiver having at least two opposing substantially vertical side surfaces and a substantially vertical back surface therebetween, and having a top surface substantially horizontally disposed between said side side surfaces;

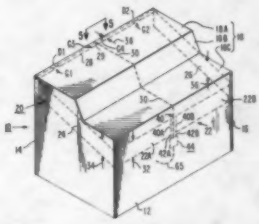
a substantially horizontal loop formed of a band of electrically conductive material having a gap defining first and second feed terminals, which loop includes

a first portion of said band of electrically conductive material affixed along said top surface between said side surfaces,

a second portion of said band of electrically conductive material substantially horizontally affixed along said back surface between said side surfaces,

a third band portion of said of electrically conductive material affixed along one of said side surfaces for connecting one end of said first portion of said band to one end of said second portion of said band,

a fourth portion of said band of electrically conductive



material affixed along the other of said side surfaces for connecting an other end of said first portion of said band to an other end of said second portion of said band, and

said second, third and fourth portions of said band each having a respective width dimension greater than that of said first portion of said band,

whereby the width dimension of said first portion of said band lies in a substantially horizontal plane and the width dimensions of said second, third and fourth portions of said band lie in substantially vertical planes;

tuning circuitry coupled to said first and second feed terminals for tuning said loop over at least a portion of said frequency bands responsive to a control potential, said tuning circuitry being affixed to said cabinet proximate said first and second feed terminals; and

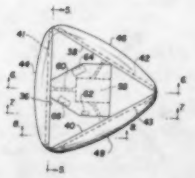
a transmission line for coupling said tuning circuitry to the tuner of said television receiver.

4,380,012

RADOME FOR AIRCRAFT

David Bevan, Media, Pa.; James S. Yee, Seattle, Wash., and Richard R. Pruyn, Valley Forge, Pa., assignors to The Boeing Company, Seattle, Wash.

Filed Jul. 17, 1981, Ser. No. 284,029
Int. Cl.³ G09F *9/30*
U.S. Cl. 343—705 **20 Claims**



10. In an aircraft radar system, the combination comprising:

a housing having a planform which approximates an equilateral triangle in shape and including triangular top and bottom walls joined by three side walls to define a housing

enclosure therebetween, the three side walls being curved outwardly between the top and bottom walls;

housing support means for mounting the housing to the aircraft;

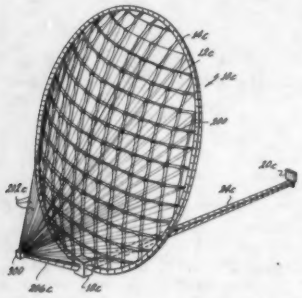
three identical, substantially planar radar antennas disposed in a substantially triangular planform within the housing and facing outward respectively toward the three housing side walls, each antenna including a phased array of antenna elements.

4,380,013

EXPANDABLE PANEL AND TRUSS SYSTEM/ANTENNA/SOLAR PANEL

Paul Slysh, San Diego, Calif., assignor to General Dynamics Corp./Convair Division, San Diego, Calif.

Filed Feb. 17, 1981, Ser. No. 234,830
Int. Cl.³ H01Q *1/28, 1/08*
U.S. Cl. 343—753 **41 Claims**



1. An expandable panel/truss system wherein a plurality of panels are alternately folded in an accordian-like stack as panel sets in a storage container for transporting into space for deployment to form space structures, the improvement comprising:

truss means in the form of a ring formed by deployed unfolded panels emanating from said storage container which forms a selected geometric configuration outlining a space;

said storage container forming part of said geometric configuration; and

means folded in said storage containers and unfolded and deployed with said truss means to fill the space outlined by said geometric configuration

said panel sets are panel pairs which when deployed are circular in cross-section.

4,380,014

FEED HORN FOR REFLECTOR ANTENNAE

H. Taylor Howard, San Andreas, Calif., assignor to Chaparral Communications, Inc., Los Altos, Calif.

Filed Aug. 13, 1981, Ser. No. 292,509
Int. Cl.³ H01Q *13/00*
U.S. Cl. 343—786 **6 Claims**

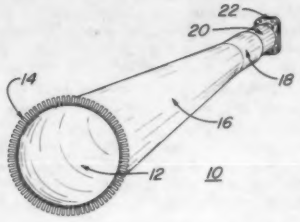
1. An electromagnetic feed horn for use with antenna reflectors in a waveguide transmission system, said feed horn compriaing:

an aperture for receiving electromagnetic waves, including a plurality of protuberances symmetrically disposed radially outward along the periphery thereof and orthogonal to the direction of propagation of said waves;

a conical section coupled to the aperture for receiving electromagnetic signals therefrom;

a waveguide mount for mounting the feed horn to the waveguide transmission system;

an impedence matching section coupled to the waveguide mount, for matching the electromagnetic signal impedance of the feed horn to the waveguide system; and



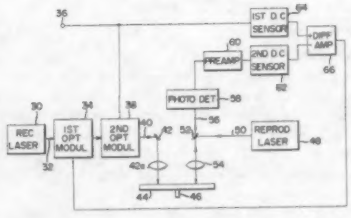
a waveguide transition section for coupling the conical section to the impedance matching section and for converting energy received from the conical section to signals propagating in a waveguide mode.

4,380,015

RECORDING SYSTEM FOR RECORDING INFORMATION ON RECORD MEDIUM BY USING ENERGY BEAM

Osamu Ito, Itami, and Isao Watanabe, Takatsuki, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 240,063
Claims priority, application Japan, Apr. 28, 1980, 55-56526
Int. Cl.³ G01D *15/14*
U.S. Cl. 346—108 **6 Claims**



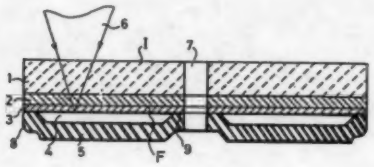
1. A recording system for recording information on a record medium by using an energy beam, comprising an input terminal which is supplied with an electrical recording signal, a recording source of an energy beam for generating an energy beam for recording information on said record medium, a modulator means for modulating said energy beam with said electrical recording signal, a recording means for recording said information on said record medium with said modulated energy beam, a reproducing means for reproducing information recorded on said record medium substantially simultaneously with the recording of said information to produce a reproduced signal converted to an electrical signal, a first duty cycle sensor means connected to said reproducing means to sense a duty cycle of said reproduced signal from said reproducing means, a second duty cycle sensor means connected to said input terminal to sense a duty cycle of said recording signal, a differential amplifier means connected to said first and second duty cycle sensor means to generate a difference between output signals from said first and second duty cycle sensor means to produce a differential signal, and a control means connected to said differential amplifier means to control the power of said energy beam entered into said modulator means from said source of said energy beam in response to said differential signal from said differential amplifier means.

4,380,016

PROTECTED OPTICAL DISC

Jean-Claude Lehureau; Henriette Magna, and Michel Thirouard, all of Paris, France, assignors to Thomson-CSF, Paris, France

Division of Ser. No. 78,728, Sep. 25, 1979, Pat. No. 4,308,545.
This application Oct. 15, 1980, Ser. No. 197,233
Claims priority, application France, Sep. 29, 1978, 7827920
The portion of the term of this patent subsequent to Dec. 29, 1998, has been disclaimed.
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 8 Claims



1. A protected optical disc for the recording of information comprising:

an optically transparent plate having a central hole and outer and inner surfaces;

a layer of recording material deposited on said inner surface, said layer being inscribable and optically legible by reflection by a radiation beam traversing said transparent plate and being focused on said layer in a ring-shaped inscription region thereof;

an intergral preshaped cover having a central hole of substantially the same diameter as the central hole of said optically transparent plate, a central ring-shaped contact surface immediately surrounding said central hole, and an edge ring-shaped contact surface the two contact surfaces being adapted to be in contact with said layer of preceding material deposited on said inner surface of said transparent plate with the central hole of the integral cover being aligned with the central hole of the transparent plate, the cover being shaped so as to include an inner annulus forming said central ring-shaped contact surface in contact with said inner surface of said transparent plate, an intermediate annulus, concentric with said inner region, not in contact with said inner surface of said transparent plate and an outer annulus forming said edge ring-shaped contact surface in contact with said inner surface of said transparent plate, an annular chamber being formed by the contact between said transparent plate and said preshaped cover at said two contact surfaces.

4,380,017

METHOD FOR INK JET PRINTING

Donald L. Ort, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

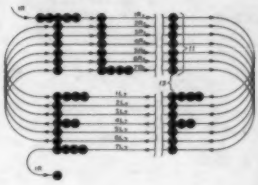
Filed Oct. 1, 1980, Ser. No. 192,674
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R 6 Claims

1. A method of bidirectional ink jet printing, which eliminates the necessity for compensating for velocity imparted droplet offset, which comprises:

(a) moving at least one ink jet nozzle of the drop-on-demand type relative to a record receiving surface in a first direction to print a first line thereon;

(b) providing relative movement between said record receiving surface and said at least one ink jet nozzle to align said nozzle with a second line in printing relationship thereto;

(c) moving said at least one ink jet nozzle relative to said record receiving surface in a second direction, which is opposite to said first direction, to print a second line on said record receiving surface;

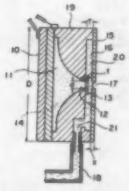
(d) providing relative movement between said record receiving surface and said at least one ink jet nozzle to align said at least one ink jet nozzle in printing relationship to said first line; and

(e) repeating step (a) at least once, and wherein printing of said first line occurs only while said ink jet nozzle is moving in said first direction and wherein printing of said second line occurs only while said ink jet nozzle is moving in said second direction.

4,380,018

INK DROPLET PROJECTING DEVICE AND AN INK JET PRINTER

Sadanari Andoh; Junji Maeda, both of Kyoto; Kiyoshi Fukushima, Kobe; Hiroichi Yoneda, Neyagawa, and Naotomo Jinushi, Hirakata, all of Japan, assignors to Sanyo Denki Kabushiki Kaisha, Osaka, Japan

Filed Jun. 10, 1981, Ser. No. 272,078
Claims priority, application Japan, Jul. 22, 1980, 55-103727[U]; Aug. 11, 1980, 55-114120[U]; Oct. 16, 1980, 55-145370; Feb. 18, 1981, 56-23445; Jun. 20, 1981, 56-84264; Sep. 17, 1981, 56-132128[U]
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R 19 Claims



18. An ink jet printer including an ink droplet projecting device comprising:

a pressure generating means which vibrates in response to an electric signal;

a pressure cell, a part of the side wall thereof being composed of said pressure generating means and a passive vibrating means which has a smaller area than that of the pressure generating means;

transmission medium filled in said pressure cell to transmit the vibration of the pressure generating means to the passive vibrating means; and

means for holding an ink layer on the passive vibrating means on the exterior side of said pressure cell;

whereby the pressure generated by the vibration of the pressure generating means is concentrically given to the passive vibrating means through the transmission medium, the passive vibrating means vibrates thereby, and by this vibration, the ink droplet is projected from the ink layer.

4,380,019

DEVICE FOR MONITORING THE SUPPLY OF PRINTING FLUID IN INK PRINTING DEVICES

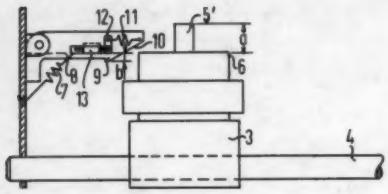
Wolfgang Steinberger, Greilsberg, and Gerhard Stempfl, Toeging, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 28, 1981, Ser. No. 297,368

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1980, 3034067

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—140 R 5 Claims



1. Apparatus for monitoring ink supply for an ink printing device comprising a printing carriage means disposed for back and forth movement on a lateral path along a guidance structure, a printer head means mounted on said printing carriage means, an ink reservoir housing for containing an ink supply mounted on said printing carriage means cooperatively connected to said printer head means via a supply means, said reservoir housing having a cover portion and a tappet member, said tappet member having a base portion for resting on the upper level of the ink supply and an upstanding stem portion freely projecting through said cover portion for reciprocable movement in accordance with the changing level of the ink supply, and a monitoring means stationarily mounted at one lateral end of said guidance structure disposed in the movement path of said reservoir housing for sensing the degree of projection of said stem portion over said cover portion to detect the level of ink supply in said reservoir housing.

4,380,020

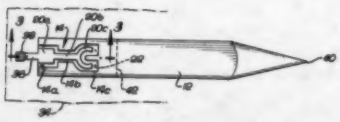
ACTIVE HIGH FREQUENCY SEMICONDUCTOR DEVICE WITH INTEGRAL WAVEGUIDE

Lloyd T. Yuan; Yu-Wen Chang, both of Rancho Palos Verdes, and Thomas G. Mills, Carson, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jan. 21, 1980, Ser. No. 114,031

Int. Cl.³ H01L *27/26*

U.S. Cl. 357—3 14 Claims



1. A monolithic semiconductor device capable of operation at extremely high frequencies, said device comprising:

a substrate that serves as a waveguide as well as a substrate;

a metallic layer on said substrate having a recess opening toward said substrate and defining a cavity and a contact portion extending across said recess;

an active high-frequency semiconductor device within said cavity between and in contact with said substrate and said contact portion including a first semiconductor layer on said substrate extending across said cavity beyond said contact portion and a second semiconductor layer in contact with said contact portion; and

conductor means on said substrate within said recess and contacting said first semiconductor layer for supplying power to said device.

4,380,021

SEMICONDUCTOR INTEGRATED CIRCUIT

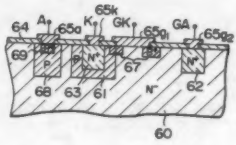
Mitsuo Matsuyama; Ichiro Ohhinata, and Junjiro Kitano, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 21, 1980, Ser. No. 131,931

Claims priority, application Japan, Mar. 22, 1979, 54-32285

Int. Cl.³ H01L *29/48*

U.S. Cl. 357—15 3 Claims



1. A semiconductor integrated circuit comprising:

a semiconductor substrate of a first conductivity type;

at least one first diffusion layer with a low impurity concentration of a second conductivity type opposite to the first conductivity type formed within said substrate;

a second diffusion layer with a high impurity concentration of the first conductivity type formed within said first diffusion layer;

a third diffusion layer with a high impurity concentration of the first conductivity type formed within said substrate;

wiring layers formed on the surfaces of said second and third diffusion layers;

a metal layer directly contacting with said substrate; and

a fourth diffusion layer of the second conductivity type shaped within said substrate like a frame under the peripheral portion of said metal layer and formed more shallowly than said first and said second diffusion layer, in which

a portion of said second diffusion layer overlaps a portion of said first diffusion layer; said metal layer serves as an external contact wiring layer for said first diffusion layer; said substrate, said first diffusion layer and said second diffusion layer are used as a collector region, a base region and an emitter region, respectively, thereby to form an NPN transistor; said third diffusion region is used as an ohmic contact for said collector region; and said substrate, said metal layer and said fourth diffusion layer are used as a cathode region, an anode region and a guard ring, respectively, thereby to form a Schottky barrier diode.

4,380,022

MONOLITHIC FULLY INTEGRATED CLASS B PUSH-PULL MICROWAVE GaAs MESFET WITH DIFFERENTIAL INPUTS AND OUTPUTS WITH REDUCED MILLER EFFECT

Max N. Yoder, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 9, 1980, Ser. No. 214,601

Int. Cl.³ H01L *29/80*

U.S. Cl. 357—22 4 Claims

1. An improved field effect transistor device of the type having a body of semiconductor material, and a plurality of drains, gates and sources operatively disposed on the body of semiconductor material, said field effect transistor device being connected in a differential input and output configuration including a positive gate bus, a negative gate bus, a positive drain bus, a negative drain bus, and a common source bus, wherein the improvement for a single one of a plurality of

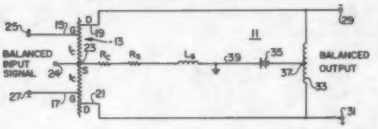
alternate parallel connected operating units of said field effect transistor device comprises:

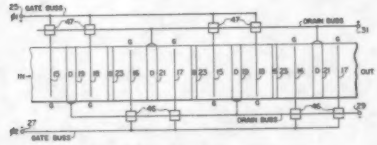
a common source operatively connected to the common source bus;

first and second drains juxtaposed on opposite sides of said common source, said first drain being operatively connected to the negative drain bus, and said second drain being operatively connected to the positive drain bus;

first and second gates juxtaposed on opposite sides of said first drain, said first and second gates being operatively connected to the positive gate bus;

third and fourth gates juxtaposed on opposite sides of said second drain, said third and fourth gates being operatively connected to the negative gate bus; and





positive feedback means including first, second, third and fourth crossover capacitors, said first and second crossover capacitors being operatively connected between the positive gate bus and the positive drain bus at said first gate and said second gate, respectively, and said third and fourth crossover capacitors being operatively connected between the negative gate bus and the negative drain bus at said third gate and said fourth gate, respectively, for minimizing the negative feedback effect of the Miller capacitance beween the positive gate bus and the positive drain bus and said first and second gates and said first drain, and for minimizing the negative feedback effect of the Miller capacitance between the positive gate bus and the positive drain bus and said first and second gates and said second drain.

4,380,023
ELECTRONIC IMAGING APPARATUS WITH LIGHT VALVE AREA ARRAYS

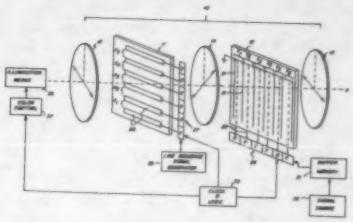
Jose M. Mir, Rochester; Jerry R. Varner, Fairport, and Clark N. Kurtz, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 29, 1981, Ser. No. 230,097
Int. Cl.³ H04N *1/46, 1/22*
U.S. Cl. 358—75 **13 Claims**

1. An electronic imaging device comprising:

(a) first and second light-modulating panels each including (i) a plurality of generally coplanar and parallel light valve strips, formed of an electro-optic material of the type that is transformable by an electric field from a non-polar, isotropic state to a polar, birefringent state, and (ii) addressable means for selectively applying discrete electric fields transversely across respective strips, said panels being generally parallel, with their respective strips opposing and in a generally orthogonal relation; and

(b) first, second and third light-polarizing means in optical alignment with said panels, said first and third polarizing means being located respectively on opposite sides of said panels and oriented with their directions of polarization generally aligned, said second polarizing means being located between said panels and oriented with its direction

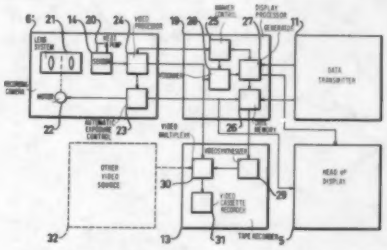


of polarization generally orthogonal to those of said first and third light-polarizing means.

4,380,024
AIRBORNE VEHICLE REFERENCED (OUTSIDE WORLD) RECORDING DEVICE UTILIZING AN ELECTRO-OPTICAL CAMERA AND AN ELECTRONIC ALIGNMENT PROCEDURE

Hasse E. O. Olofsson, 25 Nämndemansbacken, Enskede, Sweden (S-122 36)

Filed Nov. 19, 1980, Ser. No. 208,282
Claims priority, application Sweden, Nov. 19, 1979, 7909530
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—93 **7 Claims**



1. Arrangement for electronic recording of outside world and display symbol registration in airborne vehicles comprising an electronic recording camera, a head up display and a recorder characterized in that the camera is calibrated with close tolerances to the same reference axes as the head up display's display symbology, the output signals from said camera and control signals of said display symbology being processed and combined in an electronic unit for simultaneous registration in the recorder.

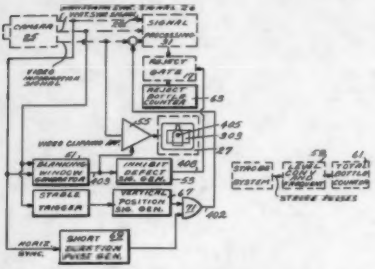
4,380,025
AUXILIARY BLANKING AND AUXILIARY SIMULATED VIDEO LINE GENERATOR UNIT FOR A VIDEO INSPECTION SYSTEM

David W. Deane, Otterbein, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Aug. 6, 1979, Ser. No. 63,927
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—106 **19 Claims**

1. In a video inspection system for the inspection of articles of manufacture including a video camera for supplying a video information signal and utilizing horizontal and vertical sync signals, a blanking apparatus for producing within a predetermined inspection window a blanking window within which inspection is inhibited, said blanking apparatus comprising:

means for generating a horizontal lead signal having timing adjustable with respect to said horizontal sync pulses;
means for generating a horizontal trail signal having timing adjustable with respect to said horizontal sync pulses;
means for generating a vertical lead signal having timing adjustable with respect to said vertical sync pulses;



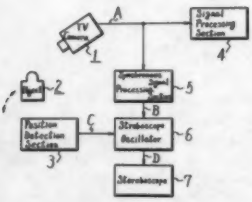
means for generating a vertical trail signal having timing adjustable with respect to said vertical sync pulses; and
means for combining said horizontal lead signal, horizontal trail signal, vertical lead signal and vertical trail signal to form a blanking window signal defining said blanking window within which inspection is inhibited.

4,380,026

METHOD FOR FLASHING A STROBOSCOPE FOR USE WITH JUDGING THE GOOD OR BAD OF AN OBJECT TO BE INSPECTED

Yutaka Kubota, Odawara, Japan, assignor to Stanley Electric Co. Ltd., Tokyo, Japan

Filed Dec. 10, 1980, Ser. No. 215,138
Claims priority, application Japan, Dec. 12, 1979, 54-161148
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—106 **1 Claim**



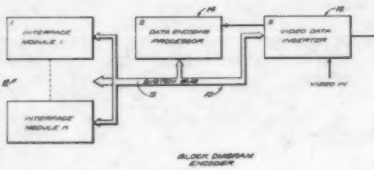
1. A method for flashing a stroboscope for use with judging the good or bad of an object to be inspected comprising the steps of:
(a) picking up an object by a television camera and producing a video signal thereof;
(b) providing a stroboscope for irradiation of said object with light therefrom;
(c) separating a vertical synchronizing signal from said video signal;
(d) detecting said object arriving at a predetermined detecting position and producing a position detecting signal, having an ON signal period longer than the period between adjacent vertical synchronizing signals;
(e) generating a signal for flashing said stroboscope when both of said position detecting signal and said vertical synchronizing signal exist,
whereby the video signal of said object is delivered from said television camera at the beginning of the scanning thereof.

4,380,027

DATA ENCODING FOR TELEVISION

William Leventer, 62 Sutton Pl., Lawrence, Long Island, N.Y. 11559, and Lawrence M. Shulman, 74 Mercury Ave., East Patchogue, N.Y. 11772

Filed Dec. 8, 1980, Ser. No. 213,915
Int. Cl.³ H04N *7/08*
U.S. Cl. 358—147 **29 Claims**



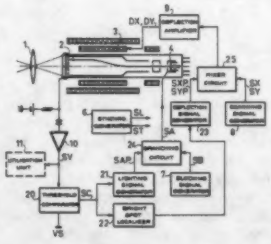
1. A system for encoding data to be transmitted along with an incoming television video signal of a given field rate, wherein a predetermined number of scan lines compose each field, comprising:
input interface means for receiving data from a number of input devices each of which provides data at a particular information rate;
encoding processing means coupled to said input interface means for accessing the data received by said input interface means from the input devices and for arranging the data into separately identifiable data groups, each of said data groups corresponding to the input device which originated the data in that group; and
inserting means coupled to said encoding processing means and to the incoming video signal for accessing said data groups from said encoding processing means and for inserting said data groups into a selected scan line of the video signal, said inserting means including timing means for providing timing signals to define a number of data channels over a portion of said selected scan line, said inserting means operating to insert each of said data groups into an associated data channel so that said data channels on said selected scan line include data which originates from the number of input devices, the amount of data identifiable with a particular input device corresponding directly to the particular information rate of the input device.

4,380,028

TELEVISION CAMERA EQUIPPED WITH AN ANTI-BLOOMING DEVICE

Christian Pepin, and Jean P. Trahand, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 10, 1981, Ser. No. 233,120
Claims priority, application France, Feb. 12, 1980, 80 03048
Int. Cl.³ H04N *5/34*
U.S. Cl. 358—219 **6 Claims**



1. A television camera equipped with an anti-blooming device intended more particularly for homing apparatus, comprising;

a camera tube for supplying a video signal and having an electrode;

scanning circuits for providing horizontal and vertical deflection signals of a raster scan for said tube;

a first signal generator for producing electron-beam blanking signals during the line and frame flyback periods;

a second signal generator for producing line and frame synchronizing signals;

an anti-blooming device comprising:

threshold comparator means for comparing said video signal to a threshold substantially equal to the camera tube saturation level to detect video signal amplitudes corresponding to a bright spot,

first means connected to the output of said comparator means for generating deflection signals which correspond to the horizontal and vertical coordinates of said bright spot, and

second means connected to the output of said comparator means for generating a signal unblanking the camera tube during a portion of the flyback period to provide a determined electron-beam intensity, said signal being provided at a repetition rate at least equal to a line period and the number of repeated occurrences thereof being determined by the brightness of the bright spot;

first mixing means for providing the raster scan deflector signals and, during flyback periods, said bright spot deflection signals; and

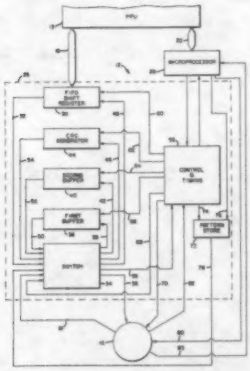
second mixing means for providing to the electrode of said camera tube, electron-beam intensity modulating signals comprising said unblanking signals during flyback periods for producing a local modification of the tube sensitivity.

4,380,029

DATA RECORDING FORMAT AND METHOD AND APPARATUS FOR PRODUCING SAME

Elwood J. Bode, Newark, Calif., assignor to BTI Computer Systems, Sunnyvale, Calif.

Filed Mar. 13, 1981, Ser. No. 243,534
Int. Cl.[3] G11B *5/09*
U.S. Cl. 360—48 9 Claims



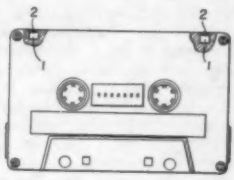
1. Apparatus for recording data in the form of a sector of serially occurring binary bits onto a storage medium comprising means for sequentially grouping the bits into n data segments wherein n is a positive integer greater than one and each data segment includes 1/n times the number of bits in said sector, means coupled to said grouping means for transmitting the bits in a data segment to said storage medium, means coupled to said grouping means for temporarily storing a data segment of bits, means coupled to said grouping means and said storing means for combining in accordance with a prescribed function the bits of the data segment in said storing means with the bits in the immediately succeeding data segment thereby to update the contents of said storing means as each data segment is transmitted to said storage medium, means responsive to the bits in a data segment for generating a CRC signal, means for coupling the CRC signal to said transmitting means so that the CRC signal is applied to the storage medium in association with the data segment in response to which the CRC signal is generated, and means for transmitting the content of said storing means to said storage medium for storage thereinafter the nth data segment and the CRC signal associated therewith, thereby to establish a check segment containing a data pattern representative of the data stored in all said data segments.

4,380,030

MAGNETIC TAPE CASSETTE

Haruo Shiba, Saku, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 79,194, Sep. 26, 1979, abandoned. This application Jun. 16, 1981, Ser. No. 274,198
Claims priority, application Japan, Nov. 20, 1978, 53-158695
Int. Cl.[3] G11B *15/04, 23/06*
U.S. Cl. 360—132 3 Claims



1. A magnetic tape cassette, comprisig:

a cassette casing having a first surface including a tape reading aperture and a second surface opposite said first surface;

at least one recess on said second surface, each said at least one recess including opposing lateral walls, a bottom wall, a projection centrally located on each of said lateral walls and a slot extending in said bottom walls; and

an elastic fitting piece for each said at least one recess, each said fitting piece forming a channel shape including two legs and a connecting portion and being symmetric about a plane passing centrally through said legs and connecting portion, each of said legs including a lug forming an enclosing mating portion, each said lug being centrally located on one of said legs and on said plane of symmetry, said connecting portion including an extending portion which extends beyond said legs;

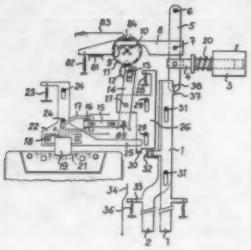
wherein said fitting piece is adapted to fit into said recess in either of two positions, a first position in which each said enclosing mating portion of each said lug is matingly engaged with one of said projections and said connecting portion covers all of said recess except for a portion corresponding to said slot, and a second position in which each said enclosing mating portion of each said lug is matingly engaged with one of said projections and said connecting portion is perpendicular to said bottom wall to uncover said recess, with said extending portion engagingly inserted in said slot to prevent lateral movement of said fitting piece,

whereby said fitting piece maybe moved from one of said two positions to the other of said two positions with said plane of symmetry in either of two opposite angular orientations.

4,380,031
CONTROL FOR BIDIRECTIONAL DRIVE RESPONSIVE TO GAPS IN RECORDED SOUND

Stephane M. A. d'Alayer de Costemore d'Arc, Genappe, Belgium, assignor to Staar S.A., Belgium

Filed Oct. 14, 1980, Ser. No. 196,754
Claims priority, application Belgium, Mar. 14, 1980, 1/99789
Int. Cl.[3] H04N *9/16*
U.S. Cl. 360—74.1 15 Claims



1. In a tape transport having a bi-directional drive for movement of tape at playback speed and fast speed in either direction; a soundtrack pick-up head operatively positioned to engage the tape, said head having two sets of head channels for detecting recordings on respective sets of recording tracks on recording tape; switch means shiftable from one state to another for enabling one set or the other of said sets of head channels; signal detection circuit means for receiving audio signals from the enabled set of head channels and for producing actuating signals in response to a silence interval of predetermined minimum duration in said audio signals indicating a silence period between recordings on the corresponding set of recording tracks; drive control means including a reversing mechanism operable to reverse the drive for movement of tape at playback speed or fast rewind speed; and a fast rewind actuator; the improvements comprising:

means connecting said reversing mechanism for said bi-directional drive to said switch means, including means having two states representing the respective directions of tape movement connected for shifting the state of said switch means and switching the enabled sets of head channels to accommodate the direction of tape movement upon reversal of said drive;

means for disconnecting said connecting means from shifting the state of said switch means upon reversal of said drive for movement of the tape at fast rewind speed so as to maintain the same state of said switch means and enabled set of head channels;

said connecting means being operable to shift the state of said switch means upon reversal of said drive for movement of the tape at playback speed; and

means for connecting said actuating signals from said silence detection circuit means to operate said drive control means and actuate said reversing mechanism during movement of the tape by said drive at fast rewind speed.

4,380,032
TAPE SYSTEM WITH OPTICALLY CONTRASTING DATA MARKS

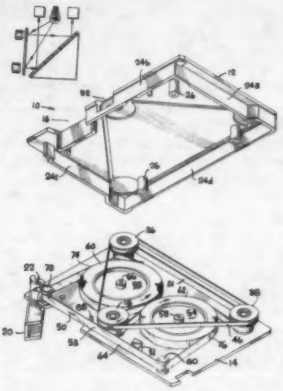
R. Fred Pfost, Los Altos, Calif., assignor to Newell Research Corporation, Saratoga, Calif.

Filed Apr. 25, 1980, Ser. No. 143,785
Int. Cl.[3] G11B *15/52*
U.S. Cl. 360—74.6 14 Claims

12. In a tape playing system wherein the tape moves in a tape path and has color marks thereon indicative of data, the improvement comprising,

(i) lamp means for illuminating a tape path in which a tape with color marks thereon moves relative to the lamp means,

(ii) at least one light sensor disposed with a viewing axis for receiving light after impingement on the tape from the source,

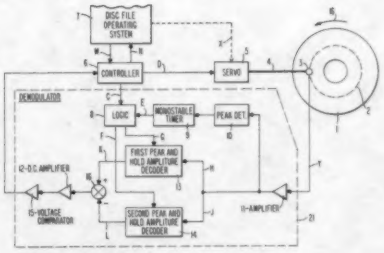


(iii) feedback means connected to said light intensity detection means and to said lamp means for controlling the intensity of illumination onto said tape path and directed to the light sensors such that an approximately constant level of illumination is set at the detectors defining the tape background and the contrast ratio between the color marks and the tape background exceeds a threshold level.

4,380,033
DISC-DRIVE HEAD POSITIONING SYSTEMS

Kantilal Bacrania, Stevenage, England, assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 21, 1980, Ser. No. 170,334
Claims priority, application United Kingdom, Jul. 19, 1979, 7925197
Int. Cl.[3] G11B *3/10, 5/58;* G05B *15/02*
U.S. Cl. 360—77 8 Claims



1. Apparatus for computing the mean value of a correction position demand signal for a servo track on a moving medium, said mean value to be used for error correction of the position demand signal for other tracks, said position demand signals being applied to a servomechanism to move a transducer to a disposition over a track on said moving medium, said transducer recovering first and second position-indicating signal components from said servo track, comprising:

a controller for communicating with said servomechanism;

control logic communicating with said controller; and

a demodulator including first and second amplitude decod-

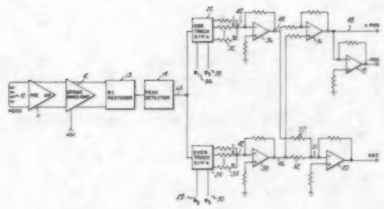
ers and a comparator, said first and second amplitude decoders communicating with said control logic, said first and second amplitude decoders receiving and detecting said first and second position indicating signals respectively from said transducer, the outputs of said first and second amplitude decoders being coupled to said comparator which provides a nonparity output when said transducer is not proximately disposed over said servo track and a parity output when said transducer is proximately disposed over said servo track, said comparator output coupled to said controller which provides a first correction position demand signal to said servomechanism to move said transducer until said parity is reached in said comparator, said control logic responding to said parity to cause said first and second amplitude decoders to next receive and detect said second and first position indicating signals respectively, and provide outputs to said comparator, said comparator providing an output to said controller to provide a second correction position demand signal to said servomechanism to move said transducer until parity is reached in said comparator, said controller computing the mean value of said first and second correction position demand signals at parity, whereby, said mean value is used to correct the positional demand signals for all other tracks on the medium.

4,380,034

TRACK CENTERING SERVO PULSE NOISE FILTER

Guss L. Krake, Richfield, Minn., assignor to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Sep. 26, 1980, Ser. No. 191,471
Int. Cl.³ G11B *21/10*
U.S. Cl. 360—77 **7 Claims**



1. In a disk track centering servo system having even pulses written on one servo track and odd pulses written on an adjacent servo track, a read head for reading information, including said pulses, means for preamplifying said pulses, and means for distinguishing between odd and even pulses, the improvment comprising:

first and second pluralities of analog sample and hold circuits, each having an output;

means for inputting even pulses, one pulse per circuit, into said first plurality of said circuits; said first circuits holding the latest received N pulses, where N is a predetermined number;

means for inputting odd pulses, one pulse per circuit, into said second plurality of said circuits; said second circuits holding the latest received N pulses, where N is a predetermined number;

means for analog summing the outputs of said first plurality of circuits to form a first sum;

means for analog summing the outputs of said second plurality of circuits to form a second sum; and

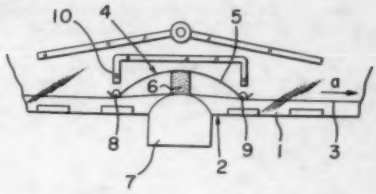
means for deriving the difference between said first sum and said second sum to form a position error signal.

4,380,035

MAGNETIC TAPE CASSETTE

Hiroshi Ota; Eiji Horigome, and Hitoshi Azegami, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1980, Ser. No. 184,063
Claims priority, application Japan, Sep. 6, 1979, 54-123156[U]
Int. Cl.³ G11B *23/04*
U.S. Cl. 360—130.33 **5 Claims**



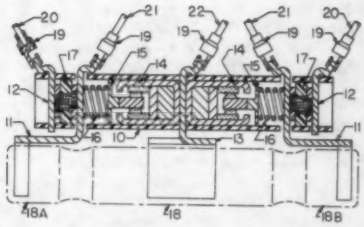
1. A magnetic tape cassette, which comprises: a resilient, coated pad support member having a coat formed from an organic solvent soluble rust inhibitor and an organic solvent soluble synthetic resin, wherein said coated pad support member produces a pad pressure substantially the same as the pressure produced when said pad support member is uncoated.

4,380,036

CLIP-ON PROTECTOR

Gerald Coren, 18 Willben La., Plainview, N.Y. 11803

Division of Ser. No. 74,885, Sep. 12, 1979, Pat. No. 4,317,153, which is a continuation-in-part of Ser. No. 880,756, Feb. 24, 1978, Pat. No. 4,191,987. This application Aug. 12, 1981, Ser. No. 292,232
Int. Cl.³ H02H *9/06*
U.S. Cl. 361—119 **1 Claim**



1. A method of assuring multi-mode electrical protection for telephone lines that employ a gas tube arrestor and wherein the method is adapted for use with a device which clips onto the gas tube arrestor by means of metallic fingers that are in thermal and electrical contact with the respective electrodes of the gas tube arrestor, comprising the steps of placing a heat coil assembly in the device which is responsive to a sustained overcurrent condition and is adapted to open-circuit upon same, placing a common form of terminal means on the device, with the terminal means extending from the periphery of the device, positioning the heat coil assembly between a first one and a second one of the terminal means, placing an over-voltage arrestor in the device with the over-voltage arrestor in pressure engagement with the heat coil assembly thus causing the heat coil assembly to establish electrical continuity with the two terminal means between which it is positioned whereupon removal of the over-voltage arrestor or heat coil assembly from the device operates to break the electrical continuity established between the two terminal means, placing a common form of connector on each incoming line, placing a com-

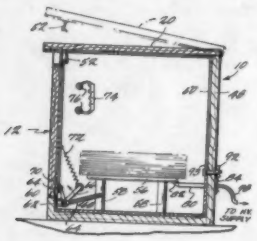
mon form of connector on each apparatus line, the common form of connector that is placed on each incoming and apparatus line being adapted to mate with the common form of terminal means on the device, connecting the common form of connector on an incoming line to one of the two terminal means, and connecting the common form of connector on an apparatus line to the other one of the two terminal means thus establishing electrical continuity between associated incoming and apparatus lines whereby if either incoming or apparatus line is disconnected from its respective terminal means, electrical continuity between the associated incoming and apparatus lines is broken electrically isolating the same.

4,380,037

ELECTROSTATIC TREATMENT OF PAPER

William D. Harris, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed May 18, 1981, Ser. No. 264,697
Int. Cl.³ H05F 3/00
U.S. Cl. 361—214 7 Claims



1. A method of altering electrostatic charges of sheets of dielectric material arranged in a stack, utilizing a plate comprised substantially of electrically conductive material inside an enclosure having electrically conductive interior surfaces, the plate being electrically insulated from the interior surfaces, comprising the steps of:

(a) placing one sheet of the stack in operative association with the plate, while maintaining the rest of the sheets of the stack free from contact with any electrically conductive manner;

(b) electrically connecting the interior surfaces to a first voltage; and

(c) electrically connecting the plate to a second voltage, much greater than the first voltage, long enough to alter the electrostatic charges.

4,380,038

OVERVOLTAGE PROTECTIVE MODULE

Maurice Roudeau, Résidence de la Commanderie Brelevenez, Lannion, France (22300)

Filed May 5, 1981, Ser. No. 260,807
Claims priority, application France, May 6, 1980, 80 10098
Int. Cl.³ H02H 9/06
U.S. Cl. 361—119 17 Claims

1. An overvoltage protective module comprising:

a body of insulating material having a recess;

an overvoltage protective element having first and second terminals and positioned in said recess;

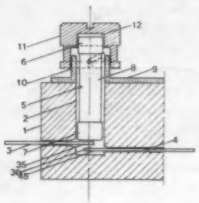
two conducting strips held in the bottom of said recess and having free and flexible ends which are located one above the other below said second terminal of said overvoltage protective element; and

means for guiding said overvoltage protective element, said guiding means including:

means secured to a face of said body and having a hole crossed by said overvoltage protective element for grounding said first terminal of said overvoltage protective element, and

detachable closing means abutting against said first terminal of said overvoltage protective element and cooperating with said grounding means to be guided along a translatory and rotatory stroke;

said free end of one of said conducting strips being disconnected from said free end of the other conducting strip and connected to said second terminal of said overvoltage protective element when said closing means is at an intermediate stationary position of said translatory and rotatory stroke, and being forced against said free end of said other conducting strip by said second terminal of said overvoltage protective element when said closing means rotates at the end of said stroke.

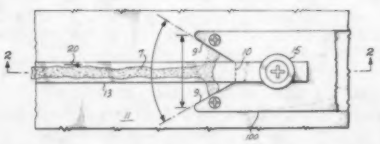


4,380,039

GROUNDING TERMINAL FOR LIGHTNING DIVERTER STRIP

Charles H. King, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US81/01313, § 371 Date Sep. 28, 1981, § 102(e) Date Sep. 28, 1981
PCT Filed Sep. 28, 1981, Ser. No. 310,242
Int. Cl.³ H05F 3/00
U.S. Cl. 361—218 2 Claims



1. A system for conducting lightning induced electrical currents to a metallic grounding structure in an aircraft, said system comprising:

a lightning diverter strip for conducting lightning induced electrical currents along an aircraft outer surface portion;

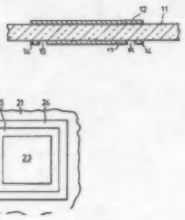
a grounding terminal having an end portion including a truncated V-notch shaped end surface;

said lightning diverter strip coupled across said aircraft outer surface portion and through the center region of said truncated V-notch shaped end surface to said metallic grounding structure.

4,380,040
CAPACITIVE SYSTEMS FOR TOUCH CONTROL SWITCHING

Robert Posset, Mont-sur-Marchienne, Belgium, assignor to BFG Glassgroup, Paris, France

Filed Aug. 7, 1980, Ser. No. 176,029
Claims priority, application United Kingdom, Sep. 28, 1979, 7933729
Int. Cl.³ H01G 7/00
U.S. Cl. 361—280 9 Claims

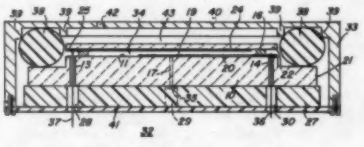


1. A capacitive system for touch control switching comprising a dielectric sheet having a first electrode on one side thereof said first electrode constituting a touch pad, and on the other side thereof in capacitive relation with the first electrode, second and third electrodes which are mutually spaced, characterised in that of said second and third electrodes, one constitutes an inner electrode and the other constitutes an outer electrode and is shaped to surround at least the major part of the periphery of said inner electrode and in that the ratio of the area of said inner electrode to the area of said outer electrode is greater than 0.25 to 1.

4,380,041
CAPACITOR PRESSURE TRANSDUCER WITH HOUSING

Roland K. Ho, McHenry, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 133,237, Mar. 24, 1980, abandoned, which is a continuation of Ser. No. 945,284, Sep. 25, 1978. This application Oct. 26, 1981, Ser. No. 314,811
Int. Cl.³ H01G 7/00
U.S. Cl. 361—283 12 Claims

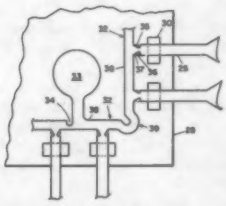


1. A pressure transducer assembly comprising:
a pressure transducer including,
base substrate means having a top surface with a peripheral portion and a bottom surface,
flexible diaphram means having a planar central portion and a surrounding peripheral portion along the perimeter of the diaphragm means,
mounting means for mounting said peripheral portion of said diaphragm means to said base substrate top surface peripheral portion, said mounting means, said diaphragm planar central portion and said substrate top surface generally forming an internal cavity, said diaphragm central portion being displaceable with respect to said top surface in response to pressure changes, wherein said internal cavity maintains a reference pressure and pressures applied exterior to said internal cavity cause said diaphragm means to flex and thereby alter electrical characteristics of said transducer in response to pressure changes, and
a flange means attached to said base substrate means and extending laterally with respect to and beyond said top surface peripheral portion and said peripheral portion of said diaphragm means, whereby said flange means forms a mounting ledge by which said transducer can be mounted without applying stress to said diaphragm means;
housing means for providing a substantially closed package for housing said pressure transducer within said housing means, said housing means having a wall to which said pressure transducer is to be mounted;
annular sealing means mounted on said flange means and positioned laterally beyond the perimeter of said diaphragm means; and
means mounting said annular sealing means and said pressure transducer to said wall, said annular sealing means contacting an interior surface of said wall and said flange means and sealing and forming an external cavity between said interior surface of said wall and said diaphragm means, said annular sealing means determining the spacing between said interior surface of said wall and said diaphragm means,
said wall having a hole therethrough extending into said internal cavity through which pressures are applied exterior to said interior cavity to cause said diaphragm means to flex and thereby alter electrical characteristics of said pressure transducer in response to pressure changes, said hole being substantially smaller than the lateral dimensions of said diaphragm means,
wherein said top surface peripheral portion of said base substrate means is planar, and
wherein said flange means is located below said plane of said peripheral portion of said base substrate means top surface and between said top and bottom surfaces of said base substrate means.

4,380,042
PRINTED CIRCUIT LEAD CARRIER TAPE

Thomas L. Angelucci, Sr., 89 Charlan Cir., Cherry Hill, N.J. 08003, and Joseph L. Angelucci, 1948 Little Dr., Deptford, N.J. 08096

Filed Feb. 23, 1981, Ser. No. 235,341
Int. Cl.³ H01L 23/48, 29/32
U.S. Cl. 361—421 10 Claims



1. A continuous flexible lead carrier tape having a plurality of sequential lead patterns thereon, the improvement comprising:
a flexible dielectric carrier based tape,
a flexible foil conductive pattern on said base tape,
an aperture in said tape adapted to receive a semiconductor device and to be connected to said foil pattern,
said foil pattern having a plurality of finger-shaped leads converging towards said aperture and extending as cantilevered leads in a common plane from said base tape over the edge portion of said aperture in said base tape to provide a plurality of inner electrical leads adapted to be connected to terminals on said semiconductor device,
a removable lead stabilizing connecting frame,

said connecting frame being formed from said foil conductive pattern,

said frame being located juxtaposed the end portion of said cantilevered leads,

lead tear links forming a conductive foil connection between said frame and said end portions of said cantilevered leads,

a frame tear link in said stabilizing connecting frame for initially severing one side of said frame, and

said stabilizing frame being adapted to be removed from said cantilevered leads by first severing said frame tear link after said cantilevered leads are connected to said terminals on said semiconductor device and subsequentially severing each lead tear link one after the other so that a uniform severing force is applied to each lead tear link.

4,380,043

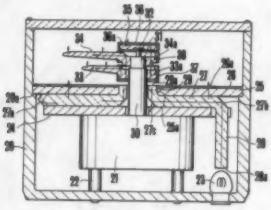
APPARATUS FOR ILLUMINATING INSTRUMENT POINTERS

Mashiro Takamatsu, Toyota; Makoto Nakao, Yokohama, and Isao Ogawa, Sagamihara, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Jeco Co., Ltd., Kawasaki, both of, Japan

Filed Dec. 5, 1980, Ser. No. 213,466

Int. Cl.³ G01D *11/28*

U.S. Cl. 362—26 **6 Claims**



1. An apparatus for illuminating instrument pointers comprising:

a dial board having a shaft hole;

pointer shafts extending from a pointer shaft drive unit to pass through said shaft hole to the front of said dial board;

a light conductive member made of a transparent material and disposed behind said dial board, said member comprising a light receiving section and a light transmission section;

a plurality of instrument pointers each made of a transparent material and comprising a collar section and a pointer section, each of said instrument pointers being mounted on said pointer shaft such that light beam emitted from said light transmission section is introduced through said collar section; and

a light emitting member opposing said light receiving section, for emitting light beam being transmitted through said light conductive member to said collar sections and to said pointer sections so as to illuminate said instrument pointers;

wherein said instrument pointers include an hour hand and a minute hand, the back surface of the collar section of said hour hand facing said light transmission section, and the back surface of the collar section of said minute hand facing the front surface of the collar section of said hour hand; and

wherein the front end surface of the collar section of said hour hand is formed with a slant plane, said light beam being transmitted through said slant plane to said collar of the minute hand.

4,380,044

D.C. TO D.C. CONVERTER WITH PLURAL FEEDBACK LOOPS

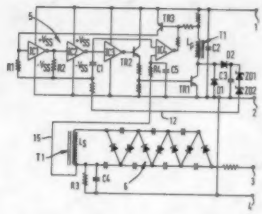
Andrew F. Parr, West Croydon, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Oct. 3, 1980, Ser. No. 193,638

Claims priority, application United Kingdom, Oct. 4, 1979, 7934430

Int. Cl.³ H02M *3/335*

U.S. Cl. 363—21 **8 Claims**



1. A d.c. to d.c. converter for deriving from a relatively low voltage battery supply a relatively high voltage d.c. output, comprising:

a step up transformer having means defining primary and secondary windings;

oscillator means for producing an output which oscillates between first and second states;

semiconductor switching means controlled by said oscillator output to switch on and off in response to said first and second states, respectively, said switching means being arranged to switch current flowing through the transformer primary in such a manner that upon switching on of the switching means the current builds up progressively and upon switching off of said switching means the current changes abruptly in a manner to induce a relatively high voltage pulse in said secondary winding and such that there is formed in said primary winding a relatively low flyback voltage pulse of a magnitude which is a function of the magnitude of said high voltage pulse;

output means coupled to the secondary winding and arranged to derive said high voltage d.c. output from high voltage pulses induced in the secondary winding;

first control means for controlling the frequency of oscillation of the oscillator in dependence upon the magnitude of said low flyback voltage pulse formed in the primary winding;

second control means including

sensing means for sensing the magnitude of the current building up in the primary;

means for causing the oscillator output to change from said first to said second state when the current level sensed by said sensing means exceeds a given level; and

third control means for sensing an abnormal load condition on said high voltage d.c. output and controlling the oscillation frequency of said oscillator means in accordance therewith.

4,380,045

THYRISTOR CONVERTOR FAILURE DETECTION DEVICE

Toshiaki Ishii, Ichinomiya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1981, Ser. No. 290,698

Claims priority, application Japan, Dec. 8, 1980, 55-172815

Int. Cl.³ H02H *7/125*

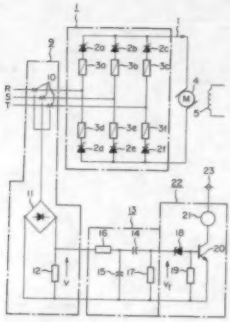
U.S. Cl. 363—54 **4 Claims**

1. A failure detection device for a convertor circuit which converts alternating current into an output direct current through a plurality of rectifying elements connected between

an alternating current voltage source and a direct current load, said failure detection device comprising:

waveform detector means for detecting the waveform of said output direct current of said convertor, and for producing a waveform signal corresponding to said waveform;

harmonic component detector means connected to said waveform detector means and responsive to said waveform signal for detecting a harmonic component of said



waveform, and for producing a harmonic component signal corresponding to said harmonic component, said harmonic component being a harmonic component having a frequency which is characteristic of an occurrence of a failure within said convertor; and

amplitude detector means connected to said detector means and responsive to said harmonic component signal for detecting the amplitude of said harmonic component and for producing a failure signal when said amplitude of said harmonic component exceeds a predetermined level.

4,380,046

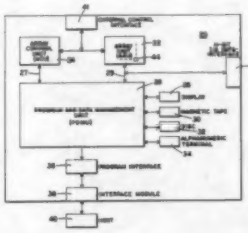
MASSIVELY PARALLEL PROCESSOR COMPUTER

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, Lai-Wo Fung, Morristown, N.J.

Filed May 21, 1979, Ser. No. 41,143

Int. Cl.³ G06F *15/16, 15/347*

U.S. Cl. 364—200 **14 Claims**



1. An apparatus for processing multidimensional, digital serial-by-bit data characterized by an ordered array of parallel data streams, comprising an ordered array of interconnected parallel processing elements corresponding to all or part of the data streams, and a control unit connected to said processing elements for causing said processing elements to process the data streams in response to a single set of instructions, each of said processing elements comprising a subunit A including means for arithmetic, shifting and memory operations, a subunit B including means for storing data, performing logical operations and sliding the stored data to a similar subunit in a neighboring processing element, a subunit C including means for storing, inputting and outputting data, a subunit D including additional memory means, and a bidirectional bus, all of said subunits being connected to said bidirectional bus for providing communication between said subunits.

4,380,047

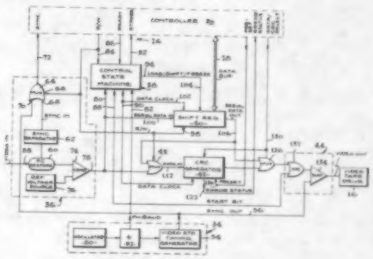
INTERFACE APPARATUS EMPLOYING A VIDEO TAPE DRIVE TO BACK-UP A DISC DRIVE AND INCLUDING ERROR DETECTING AND CORRECTING CIRCUITRY

Bruce T. Eisenhard, Cupertino, and Mark C. Hahn, San Jose, both of Calif., assignors to Corvus Systems, Inc., San Jose, Calif.

Filed Nov. 24, 1980, Ser. No. 209,903

Int. Cl.³ G06F *3/06; G11B 5/008, 5/012*

U.S. Cl. 364—200 **18 Claims**



1. An interface apparatus between a video tape recorder (VTR) having a magnetic tape and a disc drive having a magnetic storage medium and a controller, said VTR for providing on said tape memory back-up to said disc drive, said tape for recording a video signal including a sync portion and a data portion, said controller for receiving a sync signal, an error status signal, and for generating a read/write signal; said interface apparatus comprising:

a data bus for transferring data between said controller and said interface apparatus;

means for generating a clock signal;

first means responsive to the video signal and operative to separate the sync and data portions and to develop said sync signal and a data signal therefrom when said controller is generating a read signal;

a control state machine responsive to the read/write signal, and the clock signal and for generating a start bit, a data clock and a shift signal in a predetermined sequence;

a shift register coupled to said first means and said control state machine and being responsive to the data signal, said data clock and said shift signal and operative to transform data from said data signal applied in a serial manner thereto into a parallel stream of data and to apply said parallel stream onto said data bus for transfer to the magnetic storage medium of the disc drive, when said controller is generating a read signal;

said shift register also being responsive to the data clock and shift signal and operative to transform data from said controller applied on said data bus in a parallel manner thereto into a serial stream of data, when said controller is generating a write signal;

second means responsive to the data signal and said data clock and operative to selectively develop said error status signal when said controller is generating a read signal, said error status signal being indicative of an error in the video signal recorded on said tape;

said second means also responsive to the serial stream of data from said shift register and for generating an error checking signal, when said controller is generating a write signal; and

logic means for receiving said serial stream of data from said

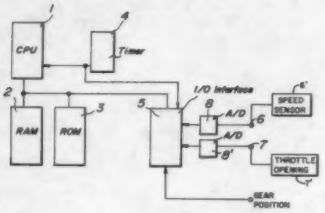
shift register, said error checking signal, said start bit, and said clock signal and for generating a video signal for recording on said tape.

4,380,048

SHIFT CONTROL SYSTEM FOR A VEHICLE AUTOMATIC TRANSMISSION

Norimasa Kishi, and Tadashi Suzuki, both of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 28, 1980, Ser. No. 134,986
Claims priority, application Japan, Apr. 3, 1979, 54-39351
Int. Cl.[3] B60K *41/08*; G06F *15/20*
U.S. Cl. 364—424.1 **12 Claims**



1. In a shift control system for an automatic transmission of the type having a plurality of predetermined shift characteristics and of the type for use in an engine powered vehicle, wherein said shift control system includes:

engine load sensor means for producing a signal corresponding to an engine load of a vehicle;

vehicle speed sensor means for producing a signal corresponding to a vehicle speed;

and means for providing a signal indicative of the presently selected one of the shift characteristics of the transmission;

the improvement comprising:

deriving means responsive to the signal from said engine load sensor means for deriving an averaged value of the engine load during a predetermined time interval for each of a succession of said predetermined time intervals;

and responsive to the signal from said vehicle speed sensor means for deriving an averaged value of the vehicle speed during said predetermined time interval for each time interval and for deriving an actual acceleration during each time interval;

means responsive to the signals from said deriving means indicative of the average value of the engine load and the average value of the vehicle speed and a signal from said signal indicator means indicative of the presently selected shift characteristic of the automatic transmission for determining a programmed acceleration as a function of said averaged engine load, said averaged vehicle speed, and the presently selected shift characteristic;

and means responsive to said so-determined programmed acceleration and said actual acceleration for comparing them to each other and discriminating whether or not another one of the transmission shift characteristics is to be selected.

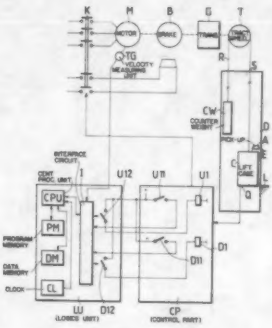
4,380,049

METHOD AND APPARATUS FOR STOPPING AN ELEVATOR

Heimo Mäkinen, Hyvinkää, Finland, assignor to Elevator GmbH, Zug, Switzerland

Filed Oct. 14, 1980, Ser. No. 196,286
Claims priority, application Finland, Oct. 18, 1979, 793228
Int. Cl.[3] B66B *1/30*; G06F *15/50*
U.S. Cl. 364—426 **6 Claims**

1. A method for causing an elevator car in motion to stop at a pre-determined position along a guided hoist-way, without using feedback or programmed signals to the travel of said car after initiation of a braking stroke, said elevator car being powered to initiate and sustain motion, and being coupled to a stopping brake for stopping the motion of said car, said method for braking comprising the steps of: actuating said brake to initiate its braking stroke at an appropriate point in time, for causing said car in motion to stop at said predetermined position, and controlling said point in time for actuating said brake by and in direct relation to conditioning signals being sensed,



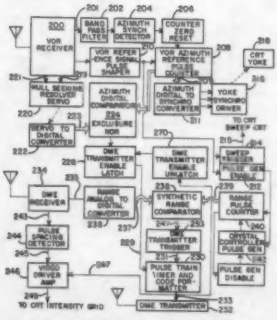
co-generated, accumulated, compared and stored prior to each braking stroke; conditioning said signals through changes of forces acting on velocity of an unbraked elevator car, including loaded weight of said car, motive power changes, direction of travel, and mechanical function; and changes of forces acting on said stopping brake performance including: brake temperature, wear, direction of braking, mechanical friction, brake-spring tension, velocity and load weight of said car being stopped.

4,380,050

AIRCRAFT LOCATION AND COLLISION AVOIDANCE SYSTEM

Jesse H. Tanner, 361 Taylor Ave. Northwest, Renton, Wash. 98055

Filed Jun. 30, 1980, Ser. No. 164,042
Int. Cl.[3] G01S *3/02*
U.S. Cl. 364—461 **33 Claims**



1. A system enabling a parent aircraft to determine the location of a target aircraft, comprising:

first means aboard a parent aircraft and a target aircraft, each for generating a synthetic azimuth function which is a time-expanded version of a periodic azimuth function describing the aircraft's azimuth as a time-delay with respect to the occurrence of an azimuth reference signal;

second means aboard the parent aircraft and target aircraft,

each for generating a time expanded synthetic range function, which function describes the aircraft's range as a time-delay with respect to the occurrence of a range reference signal;

means for providing the target aircraft with a signal representative of its azimuth with respect to a reference position and for providing the target aircraft with a signal representative of its range with respect to the reference position;

transmitter means aboard the target aircraft for transmitting an output signal at a time when the target aircraft's representative azimuth and range signals correspond, respectively, to the synthetic azimuth and synthetic range functions; and

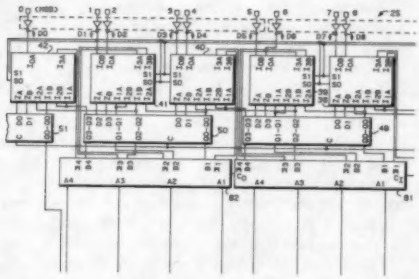
means aboard the parent aircraft for comparing the transmitted output signal from the target aircraft to the synthetic azimuth function and to the synthetic range function generated by the first and second means aboard the parent aircraft and providing an output signal to the operator of the parent aircraft indicative of the location of the target aircraft.

4,380,051

HIGH SPEED DIGITAL DIVIDER HAVING NORMALIZING CIRCUITRY

Bruce A. Fette, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 28, 1980, Ser. No. 211,009
Int. Cl.³ G06F 7/54
U.S. Cl. 364—766 **7 Claims**



1. A high speed digital, non-restoring divider circuit for obtaining a quotient from a multi-bit divisor and a multi-bit dividend, said divider circuit comprising:

(a) a first register including a plurality of stages connected to have the dividend stored therein;

(b) a second register including a plurality of stages connected to have the divisor stored therein;

(c) add/substract means connected to said first and second registers and having a control signal input for selectively, in response to a control signal, adding one of the divisor and a 2's complement of the divisor to the dividend to produce a multi-bit sum, said add/substract means having a summation output at which the sum is provided;

(d) comparing means connected to said first and second registers for comparing a most significant bit in each of said registers and having an output connected to the control signal input of said add/substract means for supplying a control signal thereto in response to a predetermined comparison of the most significant bits; and

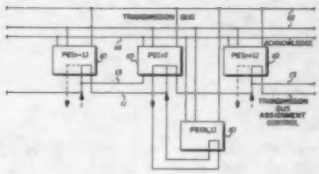
(e) connecting means connecting said add/substract means to said first register so that the multi-bit sum replaces the dividend in a shifted orientation.

4,380,052

SINGLE TRANSMISSION BUS DATA NETWORK EMPLOYING A DAISY-CHAINED BUS DATA ASSIGNMENT CONTROL LINE WHICH CAN BYPASS NON-OPERATING STATIONS

George T. Shima, Kamakura, Japan, assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 15, 1980, Ser. No. 187,531
Int. Cl.³ H04Q 9/00
U.S. Cl. 364—900 **9 Claims**



1. A network of stations for data transmissions therebetween, said network comprising:

a single transmission bus;

a plurality of stations coupled to said bus;

a bus assignment control line coupled to each of said stations in a serial manner to transmit a bus assignment control pulse;

a plurality of preceding station non-operating alert lines, each coupled between a preceding station and a succeeding station to alert said a succeeding station that said a preceding station has received said bus assignment control pulse;

each of said stations including detection means to detect when its preceding station has received but not transmitted a bus assignment control pulse after a time duration sufficient to allow said preceding station to have been assigned to said transmission bus and to have completed its transmission;

a request counter means disposed for counting to a second given count in response to a signal requesting access to said transmission bus and, if said each station does not request access to said bus, to signal said pulse receiving and transmitting means to transmit said bus assignment control pulse to said next succeeding station; and

initiate circuit means disposed for initiating an assignment control pulse to be transmitted to another station after each said station has completed transmission, said request counter means resets said initiate circuit means when a particular count is reached which is greater than said second given count.

4,380,053

MEMORY ADDRESSING SYSTEM FOR SEQUENTIALLY ACCESSING ALL MEMORY ADDRESSES IN A MEMORY AREA

Hiroshi Takahashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1980, Ser. No. 192,219
Claims priority, application Japan, Oct. 17, 1979, 54-132826
Int. Cl.³ G06F 3/02
U.S. Cl. 364—900 **3 Claims**

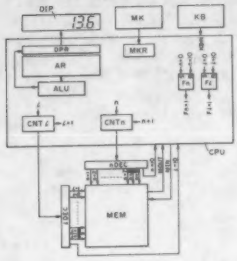
1. A memory addressing system comprising:

memory means having at least one memory area that includes a plurality of addressable locations;

a keyboard including input keys being operable to designate different ones of said plurality of addressable memory locations, a plurality of said keys capable of being operated in at least one specific sequence to designate one said memory area;

detecting means for detecting operation of said plurality of said keys in said one specific sequence to designate said

one memory area and including means for generating an output signal indicative of said detection; and



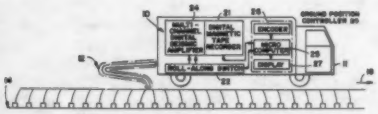
special access means for sequentially accessing all of said addressable memory locations in said one area in response to said output signal.

4,380,054

METHOD AND APPARATUS ASSOCIATED WITH A MICROCOMPUTER SYSTEM FOR INDICATING NEXT-IN-TIME PARAMETERS, AND FOR CONTROLLABLY GENERATING A POSITIONAL CODE FOR A ROLLALONG SWITCH ASSOCIATED WITH A SEISMIC SOURCE-DETECTOR ARRAY OF AN EXPLORATION SYSTEM

H. T. Carruth, Jr., Anaheim, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 16, 1980, Ser. No. 170,313
Int. Cl.[3] G06F *15/20*; G01V *1/22*
U.S. Cl. 364—900 **9 Claims**



1. Method of controllably providing a next-in-time positional code for a rollalong switch of a digital field system of an exploration system that includes a source-detector array positioned along a line of survey for generating and collecting seismic data associated with earth formation underlying said array, said rollalong switch being employed to efficiently connect (and disconnect) different but contiguous sets of detectors of said array from amid a plurality of detectors, along said line of survey, said next-in-time positional code being simultaneously generated along with additional next-in-time array parameters associated with said exploration system, by a microcomputer system that includes an MPU memory units and display and switch means interconnected to each other and to said digital field system via a system bus, comprising:

(a) on being commanded by a roll switch update signal, establishing in digital format said next-in-time positional code for said rollalong switch;

(b) transmitting said code to said rollalong switch while simultaneously indicating to a human operator via at least one of audio and visual signals, that transmission of said next-in-time code is occurring;

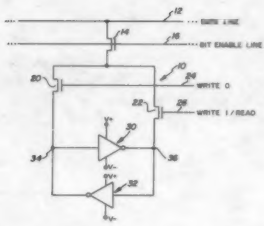
(c) terminating transmission of said code when a correct rollalong switch position is attained.

4,380,055

STATIC RAM MEMORY CELL

David N. Larson, Carrollton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

PCT No. PCT/US80/01725, § 371 Date Dec. 24, 1980, § 102(e) Date Dec. 24, 1980, PCT Pub. No. WO82/02277, PCT Pub. Date Jul. 8, 1982
PCT Filed Dec. 24, 1980, Ser. No. 278,907
Int. Cl.[3] G11C *7/06*
U.S. Cl. 365—154 **9 Claims**



5. A memory cell for storing data comprising:

a cell voltage supply source;

a data signal line for receiving control signals;

a bit signal line for receiving control signals;

first and second control lines for receiving control signals;

first transistor means having first and second terminals and a control terminal, said first terminal connected to said data signal line and said control terminal connected to said bit signal line, such that said first transistor means is activated by a first control signal received by said bit signal line;

second transistor means having first and second terminals and a control terminal, said first terminal being connected to said second terminal of said first transistor means and said control terminal being connected to said first control line, such that said second transistor means is activated by a second control signal received by said first control line;

third transistor means having first and second terminals and a control terminal, said first terminal being connected to said second terminal of said first transistor means and said control terminal being connected to said second control line, such that said third transistor means is activated by a third control signal received by said second control line;

first inverter means connected to said cell voltage supply source and having input and output terminals, said input terminal being connected to said second terminal of said second transistor means to form a first node and said output terminal being connected to said second terminal of said third transistor means to form a second node;

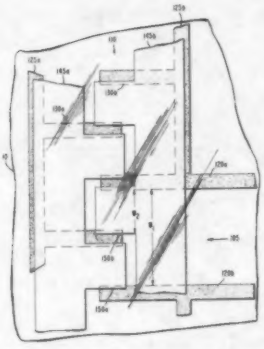
second inverter means connected to said cell voltage supply source and having input and output terminals, said input terminal being connected to said second node and said output terminal being connected to said first node; and

said first, second and third transistor means being operable, such that data is stored in the memory cell by activation of said first transistor means and one of said second or third transistor means, and data is read from the memory cell by activation of said first transistor means and said third transistor means.

4,380,056
CHARGE COUPLED DEVICE FOCAL PLANE WITH SERIAL REGISTER HAVING INTERDIGITATED ELECTRODES

William J. Parrish, Santa Barbara, and Christopher L. Fletcher, Cardiff, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 83,426, Oct. 10, 1981, abandoned. This application Feb. 20, 1981, Ser. No. 236,415
Int. Cl.³ G11C *13/04, 11/42*
U.S. Cl. 365—183 33 Claims



1. A charge coupled device (CCD) charge flow channel formed on a semiconductive substrate comprising:

first and second electrodes overlying said channel extending side-by-side in a first direction parallel to said channel and separated from one another by an insulating gap therebetween;

a first plurality of channel stop means in said substrate extending in a second direction transverse to said first direction for blocking charge flow in said first direction under said first electrode at a first plurality of spaced apart locations offset in said first direction from one another;

a second plurality of channel stop means extending in said second direction for blocking charge flow in said first direction under said second electrode at a second plurality of spaced apart locations offset in said first direction from one another and spaced apart in said first direction from said first plurality of spaced apart locations;

first electrode means for controlling charge transfer in said channel spanning said insulating gap between alternate pairs of adjacent ones of said first and second channel stop means;

a first conductor connected to said first electrode means;

second electrode means for controlling charge transfer in said channel spanning said insulating gap between the remaining pairs of adjacent ones of said first and second channel stop means;

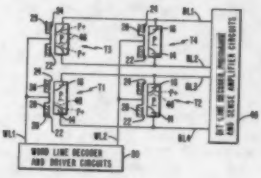
a second conductor connected to to said second electrode means; and

means for applying clock signals to said electrodes and said conductors.

4,380,057
ELECTRICALLY ALTERABLE DOUBLE DENSE MEMORY

Harish N. Kotecha, Essex Junction; Wendell P. Noble, Jr., Milton, and Francis W. Wiedman, III, Stowe, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1980, Ser. No. 200,851
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—185 15 Claims



1. A storage system comprising;

a field effect transistor having first and second spaced apart diffusion regions defining a channel region having first and second ends and a control gate disposed over said channel region and extending from said first diffusion region to said second diffusion region,

first and second charge trapping regions disposed over the first and second ends, respectively, of said channel region and between said control gate and said first and second diffusion regions,

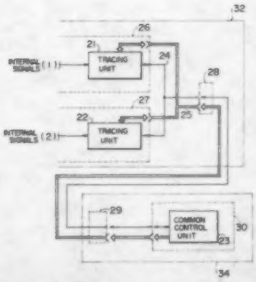
means for applying control pulses to said control gate and to said first and second diffusion regions for selectively controlling charge on said first and second charge trapping regions, and

means for sensing current flow between said first and second diffusion regions.

4,380,058
STAGE TRACER

Katsuro Wakai, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 5, 1981, Ser. No. 231,900
Claims priority, application Japan, Feb. 6, 1980, 55-12516
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—244 2 Claims



1. A stage tracer comprising:

a plurality of tracing units which are physically independent of one another, each tracing unit including a memory unit having terminals for receiving signals to be observed and a read/write control logic unit for controlling the writing and reading of data into and out of said memory unit;

a common control unit provided physically independent of

said tracing units and connected electrically with said tracing units through a signal line group, to supply the control signal desired to said read/write control logic units of said tracing units through said signal line group; and

a data bus for connecting the outputs of said tracing units with said common control unit, wherein said read/write control logic units cause said signals to be observed to be written in the corresponding memory units and also cause the contents of said memory units to be sequentially read onto said data bus through the output terminals of the corresponding tracing units in response to said control signals from said common control unit.

4,380,059

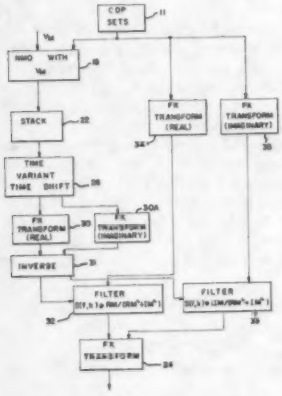
F-K FILTERING OF MULTIPLE REFLECTIONS FROM A SEISMIC SECTION

William H. Ruehle, Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 179,748, Aug. 20, 1980, abandoned. This application Dec. 29, 1980, Ser. No. 220,881

Int. Cl.³ G01V *1/32, 1/36*

U.S. Cl. 367—46 **2 Claims**



1. A method of filtering multiple reflections from seismograms representing the earth's formations comprising:

(a) generating first seismograms representing the amplitude of seismic primary and multiple reflections as a function of time and distance along a line of exploration;

(b) transforming said first seismograms into an f-k array of first real and first imaginary parts representing amplitude as a function of frequency and wave number;

(c) normal moveout correcting said first seismograms with the apparent velocity of said multiple reflections to align said multiple reflections;

(d) stacking said normal moveout corrected first seismograms having aligned multiple reflections,

(e) inverse normal moveout correcting said stacked first seismograms to produce second seismograms representing multiple reflections,

(f) transforming said second seismograms with aligned multiple reflections into an f-k array of second real and second imaginary parts,

(g) determining the inverse of said second real and second imaginary parts of the f-k array of said second seismograms,

(h) filtering said first real part of the f-k array of said first seismograms by weighting all samples of said first real part with corresponding samples of the inverse of said second real part of the f-k array of said second seismograms,

(i) filtering said first imaginary part of the f-k array of said first seismograms by weighting all samples of said first imaginary part with corresponding samples of the inverse of said second imaginary part of the f-k array of said second seismograms, and

(j) transforming said filtered first real and first imaginary parts into third seismograms representing an enhanced representation of the earth's formation with suppressed multiple reflections as a function of time and distance along said line of exploration.

4,380,060

DEVICE FOR PUSH-PULL TRANSMISSION

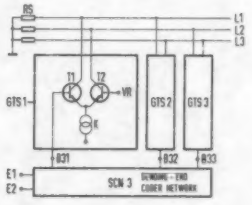
Wilhelm Wilhelm, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,235

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939252; Oct. 3, 1979, 2940140

Int. Cl.³ H04J *15/00*

U.S. Cl. 370—5 **5 Claims**



1. A system for push-pull transmission of an item of binary information, comprising: at least one line group having $n \geq 3$ lines; s push-pull transmitters and s push-pull receivers connected to the lines; a transmitting-end coder means for forming from k input signals to be transmitted $s=(n-1)\ n/2$ intermediate control signals for the control of the s push-pull transmitters whose outputs are connected in s different combinations to the n lines, where the number k of input signals is a maximum integer $<\log_2 (n?)$; inputs of the s push-pull receivers being connected to the n lines; and a receiving-end coder means for forming k output signals which are identical to the k input signals from s intermediate signals emitted from the s push-pull receivers.

4,380,061

LOOP TRANSMISSION SYSTEM WITH IMPROVED BYPASS ROUTING ARRANGEMENT

Kinji Mori, Sagamihara; Hirokazu Ihara, Machida, and Hiroshi Matsumaru, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 9, 1981, Ser. No. 281,782

Claims priority, application Japan, Jul. 11, 1980, 55-93924

Int. Cl.³ H04Q *9/00;* **H04J** *3/14*

U.S. Cl. 370—16 **12 Claims**

1. A loop transmission system comprising:

first and second loop-shaped transmission routes enabled to transmit a message in first and second directions, respectively;

a plurality of terminal units for communications through said first and second transmission routes;

a plurality of first transmission control units connected between said first transmission route and corresponding terminal units, respectively, for controlling the transmissions of the message on said first transmission route;

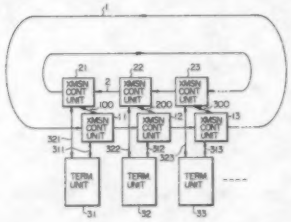
a plurality of second transmission control units connected between said second transmission route and corresponding terminal units, wherein each of said second transmission control units is coupled to mate with a corresponding one of

said first transmission control units and is connected with the same corresponding terminal unit to which said corresponding first transmission control unit is connected, said second transmission control units controlling the transmission of the message on said second transmission route; and

a plurality of bypass routes enabled to transmit the message in two ways and respectively connecting said first and second transmission control units mating with each other,

said message containing, in addition to data to be transferred, a sending address, which is equal to the address of the transmission control unit having transmitted said message, and a bypass code capable of taking a first or second value,

each of said first and second transmission control units including: means for sending the message to said bypass routes; means for receiving the message from said bypass routes; and means for storing and determining whether a minor loop is operating abnormally, said minor loop being comprised of said transmission control unit itself, a corresponding transmission control unit mated to said transmission control unit itself and located on a different transmission route, a bypass route for connecting said transmission control unit itself and the corresponding transmission control unit on a different path, a transmission control unit adjacent to said transmission control unit itself along the same transmission path, a transmission control unit corresponding to said adjacent transmission control unit and lying in the different transmission route, and a bypass route for connecting adjacent transmission unit and its corresponding transmission control unit; and



means for controlling the sending process of the message received at each of said first and second transmission control units so that, when said storing means indicates that said minor loop is abnormal in a case where said message is received from the corresponding loop-shaped transmission route to which said transmission control unit itself is coupled, said message having its bypass code corrected is fed out of said control unit such that said message having its bypass code corrected to the first value is fed out to the corresponding loop-shaped transmission route if the sending address of the message received is equal to the address of its mating transmission control unit and if said bypass code takes said second value, and such that said message is fed out to the corresponding bypass route if the sending address of the message received is equal to the address of its mating transmission control unit and if said bypass code takes said first value.

4,380,062

COMMUNICATION SYSTEM PROVIDING SIMULTANEOUS TWO-WAY TRANSMISSION

Richard L. Stuart, Columbia, Md., and Fred C. Killmeyer, Palm Bay, Fla., assignors to Rixon, Inc., Silver Spring, Md.

Filed Apr. 22, 1981, Ser. No. 256,422

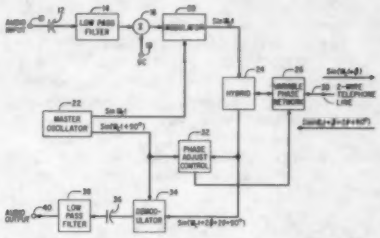
Int. Cl.³ H04B *1/56*

U.S. Cl. 370—20 **17 Claims**

6. A central transmit-receive unit for a communication system which enables signals to be simultaneously transmitted and received on a two wire line in the same frequency band, the central unit comprising:

means for transmitting a signal including means for modulating a carrier signal with an input signal to produce a transmit signal in a given frequency band;

means for receiving a signal in the same frequency band as the transmit signal, including means for demodulating the received signal, the received signal being substantially in quadrature with the transmit signal; and



means for automatically adjusting the phase of the received signal to compensate for delays in the communication system, the phase adjusting means including a variable phase network connected to the transmitter and receiver means, and means for comparing the phase of the received signal with a reference signal to control the phase adjustment of the variable phase network whereby the received signal and transmit signal are maintained in quadrature.

4,380,063

FLOW CONTROL MECHANISM FOR BLOCK SWITCHING NODES

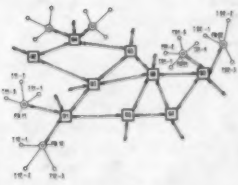
Philippe A. Janson, Wädenswil; Hans R. Müller, Langnau, and Ernst H. Rothauser, Reichenburg, all of Switzerland, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 10, 1981, Ser. No. 272,143

Claims priority, application European Pat. Off., Jun. 19, 1980, 80/103407.5

Int. Cl.³ H04J *3/00*; G06F *15/16*

U.S. Cl. 370—60 **8 Claims**



1. In a communication network including a plurality of block switching nodes interconnected by links (**22, 26**) with a receive buffer (**30**) being provided for each incoming link in each node, a flow control mechanism in each node characterized by:

means (**42**) for maintaining a token indication at the sending end of each link, reflecting available buffer capacity in the receive buffer at the receiving end of said link in the next node,

means (**28, 68**) for updating said token indication when a data block is transmitted over the respective link, and also when a token updating signal is received from the next node,

means (**46, 48, 56, 58, 60, 70, 72, 74**) for looking ahead across the node when a data block is to be dispatched from a re-

ceive buffer, to the token indication means of the appropriate outgoing link, and means (38, 40, 50, 52, 54, 62, 66, 68, 77) to cause transfer of said data block through the node and over the link to the next node in response to the current state of the token indication, and

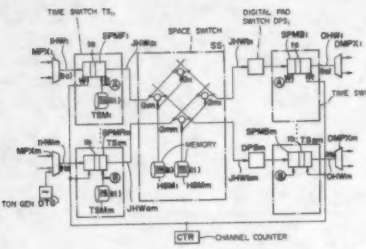
means (24, 34) for transmitting a token updating signal to the token indication means at the respective link in the previous node when a data block is dispatched from a receive buffer (FIG. 6).

4,380,064

DIGITAL AUDIO SIGNAL CONTROL SYSTEM FOR A TIMEDIVISION SWITCHING SYSTEM

Hiroshi Ishikawa, Yokohama; Takuhito Kojima, Yamato, and Eiji Minamitani, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 14, 1980, Ser. No. 196,569
Claims priority, application Japan, Oct. 17, 1979, 54-134484
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—63 **17 Claims**



6. A signal control system comprising:

a tone signal generator for generating a continuous tone signal;

a time-division speech network, having an input operatively connected to said tone signal generator and having an output, for connecting said tone signal generator to the output of said time-division speech network;

attenuation means, operatively connected to the output of said time division speech network, for varying the attenuation of the continuous tone signal; and

a time switch, operatively connected to said attenuation means, for storing the output of said attenuation means.

4,380,065

COMMUNICATION MULTIPLEXER VARIABLE PRIORITY SCHEME

Allen C. Hirtle, and Gary J. Goss, both of Acton, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 29, 1980, Ser. No. 191,629
Int. Cl.³ H04J *3/02*
U.S. Cl. 370—96 **8 Claims**

1. A data processing system for transferring data bytes comprising:

a system bus;

a main memory coupled to said system bus for storing said data bytes;

a communication multiplexer coupled to said system bus for transferring said data bytes between said main memory and a plurality of devices, each device being enabled for operation in a receive and a transmit mode respectively in response to receive and transmit channel numbers from said communication multiplexer;

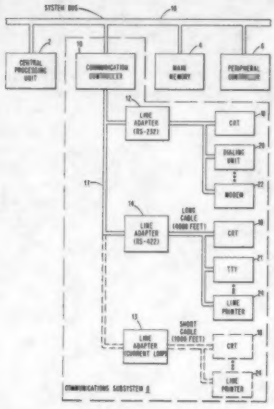
said communication multiplexer including polling means for sending a predetermined sequence of said receive channel numbers and said transmit channel numbers to said plurality of devices and receiving a request signal when one of said plurality of devices requests service by responding to said receive or transmit channel number;

said polling means including:

counter/register means for generating a first sequence of channel numbers during an initialization operation;

first multiplexer means in a first state coupled to said counter/register means for receiving each of said first sequence of channel numbers;

first in-first out (FIFO) means coupled for storing each of said first sequence of channel numbers;



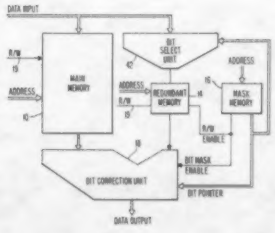
said FIFO means being coupled to said counter/register means for recirculating said first sequence of channel numbers during a polling operation, said plurality of devices being coupled to said counter/register means and responsive to said recirculating receive and transmit channel numbers for generating said request signal when one of said plurality of channel numbers requesting service receives a preassigned channel number of said first sequence of channel numbers.

4,380,066

DEFECT TOLERANT MEMORY

David H. Spencer, Lebanon; Marvin E. Steiner, East Brunswick, both of N.J., and Donald H. Lang, FranklinSquare, N.Y., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 4, 1980, Ser. No. 212,772
Int. Cl.³ G06F *11/20*; G11C *29/00*
U.S. Cl. 371—10 **12 Claims**



1. A defect tolerant memory including a multi-chip main memory receiving data inputs and address commands to read and write data, said defect tolerant memory further comprising:

a redundant memory receiving said data inputs and address

commands in parallel with said main memory to read, write and store data redundant to that contained in defective cells of said main memory, said redundant memory having multiple memory levels with each memory level having similar addresses, each similar address being representative of a segment of main memory, each said segment of main memory capable of containing multiple defects, the redundant data for each of said several defects being stored in a similar address of a different one of said memory levels, said redundant memory providing redundant data to addressed defective data as an output;

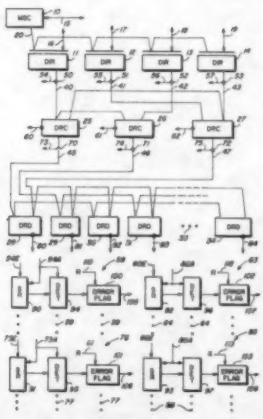
a mask memory receiving said address commands in parallel with said main memory and redundant memory for storing the sub-addresses of defective cells of said main memory, said mask memory made up of multiple bit-mask memories each cooperating with a different one of said redunant memory levels, each said bit-mask memory storing the sub-addresses of defective cells for a different redundant memory level, each bit-mask memory providing an enabling signal to its respective redundant memory level when a defective cell is addressed in the bit-mask memory, each said bit-mask memory having multiple sub-memory units, each said sub-memory unit having addresses each representative of a segment of main memory, each said address storing a word indicative of the location of a defective cell in the respective segment of said main memory, said multiple sub-memory units storing multiple addresses if multiple defects are found in a respective segment of main memory, said mask memory providing as an output an indication that a defective bit in main memory has been addressed.

4,380,067

ERROR CONTROL IN A HIERARCHICAL SYSTEM

Brent C. Beardsley, Tucson, and Allen C. Brailey, Pima, both of Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1981, Ser. No. 254,356
Int. Cl.³ G06F *11/20*
U.S. Cl. 371—11 **10 Claims**



1. The method of operating a multilevel communication network having first and second levels each with a plurality of paths, a plurality of units selectively interconnecting said levels such that one path in each level is coupled via a unit to create a signal transfer path through said levels and a one of said units, the machine-executed steps of:

assigning a criticalness for successful network operation to each path in both said levels, said criticalness being different in such levels;

measuring the error rate of each path over a predetermined number of path usages;

setting a threshold of error-rate acceptability for said paths in accordance with said assigned criticalness, the greater the criticalness, the greater the threshold;

comparing said measured error rates with said thresholds, respectively, for said paths; and

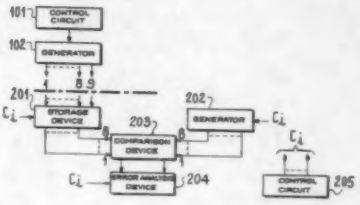
when said measured error rate exceeds said threshold for a given path, reconfiguring said network to eliminate said path therefrom.

4,380,068

TEST UNIT FOR A HIGH-RATE MULTITRACK DIGITAL RECORDER

Tristan de Couasnon, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 19, 1981, Ser. No. 226,025
Claims priority, application France, Jan. 22, 1980, 80 01326
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—24 **7 Claims**



1. A test unit for a high-rate multitrack digital recorder, said unit having a multiple input and output and comprising:

a first generator for producing a sequence of binary numbers and connected to said multiple output for transmitting data to the recorder to be tested;

a data storage means connected to said multiple input of said test unit for storing the data reproduced by the tested recorder;

a second generator for producing the same sequence of binary numbers;

means for comparing the reproduced sequence with the emitted sequence, said comparing means being connected to the output of the storage means to the output of the second generator;

an error analysis means connected to the output of the comparison means for counting the errors introduced by the recorder to be tested and detected by the comparing means; and

said error analysis means including a first counter for counting detected errors and means for locating detected errors, said error locating means including a second counter for counting reproduced binary numbers and delivering at each instant the address of the binary number analyzed in the sequence and a storage memory means connected to said comparing means and to said second counter and having a control input for causing storage of addresses of binary numbers in which errors are detected and the position of the detected errors in each erroneous number.

4,380,069

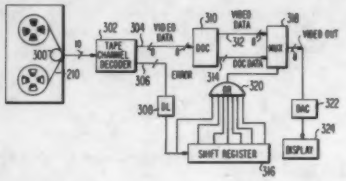
DIGITAL ERROR DETECTION USING BRACKETING

Glenn A. Reitmeier, 3 Metekunk Dr., Trenton, N.J. 08638, and Frank J. Marlowe, 20 Academy St., Kingston, N.J. 08528

Filed Dec. 18, 1980, Ser. No. 217,796
Int. Cl.³ G06F *11/12*
U.S. Cl. 371—31 **10 Claims**

2. An apparatus for handling data code words, said apparatus comprising detecting means for detecting erroneous code words, estimating means coupled to said detecting means for

estimating replacement code words both for said detected erroneous code words and for at least some code words within a selected interval of said erroneous words, and replacing means coupled to said detecting means and said estimating



means for replacing said erroneous code word and said code words within said selected interval by said estimated code words respectively, whereby most undetected errors are thus concealed.

4,380,070

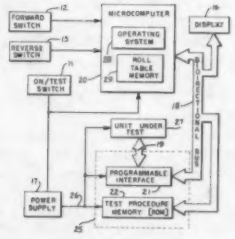
AUTOMATIC CIRCUIT IDENTIFIER

William G. Steiner, Marietta, Ga., assignor to Lockheed Corporation, Burbank, Calif.

Continuation-in-part of Ser. No. 96,030, Nov. 20, 1979, Pat. No. 4,291,404. This application Feb. 17, 1981, Ser. No. 234,686

Int. Cl.³ G06F *11/22*

U.S. Cl. 371—20 **5 Claims**



1. Apparatus for identifying a circuit having a known pin configuration and an unknown transfer characteristic among said pin configuration comprising:

a socket comprising a plurality of receptacles for holding said pin configuration;

bidirectional port means electrically connected to said socket, said bidirectional port means being selectively operable for providing input drive, output loading, and power supply conditions among said plurality of receptacles;

storage means for storing data corresponding to a plurality of input and output parameters for a plurality of circuits of known identity;

operating means connected to said storage means and responsive to said data for operating said bidirectional port means to provide said input drive, said output loading, and said power supply conditions corresponding to said input and output parameters sequentially for each of said plurality of circuits of known identity; and

testing means to control said operating means and to provide an identity signal in response to detection of said data corresponding to said input and said output parameters for one of said plurality of circuits of known identity.

4,380,071

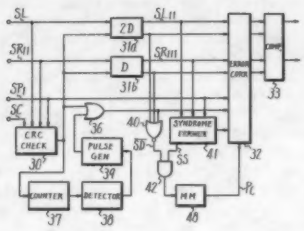
METHOD AND APPARATUS FOR PREVENTING ERRORS IN PCM SIGNAL PROCESSING APPARATUS

Kentarou Odaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 2, 1981, Ser. No. 230,395

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—40 **21 Claims**



1. A method of preventing errors in a PCM error-correction decoder of the type supplied with successive transmission blocks, each comprised of time-interleaved PCM, error-correction and error detection words, wherein said transmission blocks are supplied from one data source and then from a different data source to produce an error interval determined by the transition period from said one source to said different source, said method comprising the steps of detecting if a supplied transmission block contains an error; identifying as being erroneous each of the time-interleaved words included in the supplied transmission block which has been detected as containing an error, time de-interleaving each supplied transmission block to recover a de-interleaved block comprised of de-interleaved PCM and error-correction words; correcting an erroneous PCM word in said de-interleaved block as a function of the remaining non-erroneous PCM and error-correction words in that de-interleaved block; and inhibiting the correction of a PCM word in a de-interleaved block if said block contains at least one word derived from said one data source and another word derived from said different data source.

4,380,072

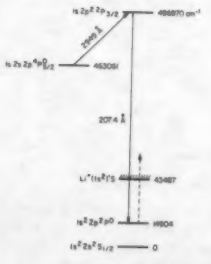
XUV LASER AND METHOD

Stephen E. Harris, Palo Alto, Calif., assignor to Stanford University, Palo Alto, Calif.

Filed Dec. 22, 1980, Ser. No. 218,781

Int. Cl.³ H01S *3/094*

U.S. Cl. 372—5 **12 Claims**



1. The method of generating XUV radiation which comprises exciting alkali metal atoms or ions of the isoelectronic sequence to a storage level which is metastable against both autoionization and radiation, pumping by irradiating with a laser the excited atoms to a higher level which is metastable

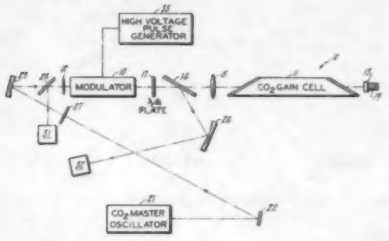
against autoionization but is strongly radiatively allowed to lase to a lower level other than ground and simultaneously emptying said lower level, both radiatively and by photoionization into the continua or to a level near enough to the continua, that electrons complete the emptying process.

4,380,073

INJECTION CONTROL OF AN ELECTRO-OPTICALLY Q-SWITCHED CAVITY-DUMPED LASER

Robert J. Wayne, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 10, 1980, Ser. No. 205,812
Int. Cl.³ H01S *3/10, 3/13*
U.S. Cl. 372—12 **3 Claims**



1. An apparatus for generating pulses of optical radiation comprising:

an electrically pumped gaseous optical gain medium;

electrical pumping means for building a population inversion within said gain medium;

a pair of reflective elements bracketing said gain medium and defining an optical cavity having an optic axis therethrough;

a polarization coupling means positioned along said optic axis intermediate said gain medium and one of said reflective elements and oriented at a predetermined angle with respect to said optic axis, whereby said coupling means couples out of said cavity radiation of a first linear polarization and passes radiation of a second polarization orthogonal to said first polarization;

phase retardation means and electro-optical polarization modulation means disposed intermediate said polarization coupling means and said one of said reflective elements;

means for applying an electrical pulse of predetermined voltage, rise time, duration and fall time to said polarization modulation means; and

continuous wave laser means for injecting a control beam of optical radiation into said optical cavity, whereby said cavity is Q switched by said polarization modulation means to build up intracavity electromagnetic radiation during said rise time and duration, which radiation is coupled out of said cavity by said polarization coupling means during said fall time.

4,380,074

INTEGRATED CIRCUIT LASER AND ELECTRO-OPTICAL AMPLIFIER

Peter J. Walsh, 40 St. Joseph Dr., Stirling, N.J. 07980

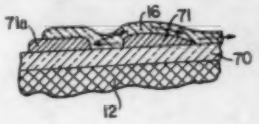
Filed Oct. 1, 1979, Ser. No. 80,526
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—43 **10 Claims**

1. An opto-electronic device capable of being integrated on a substrate capable of having electronic integrated circuits fabricated thereon, said device being particularly suited for use as a source of laser energy radiation, comprising:

a first electrically conductive sheet;

a film of amorphous semiconductor material mounted in contact with said first electrically conductive sheet intermediate said sheet and said substrate, said first electrically conductive sheet and said substrate including means for applying an electrical signal therebetween;

a second electrically conductive sheet mounted on said substrate so that said film of amorphous semiconductor material is sandwiched between said first and second conductive sheets; and



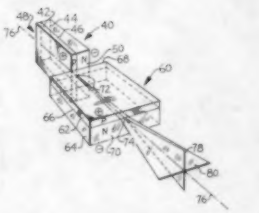
one of said electrically conductive sheets being made of a material which partially reflects and is partially transparent to laser radiation, the other electrically conductive sheet being made of a material which substantially entirely reflects laser radiation, said radiation being emitted from said device through said one conductive sheet upon the application of an electrical signal between said conductive sheets.

4,380,075

MODE STABLE INJECTION LASER DIODE

Louis B. Allen, Jr., Florissant, and Herbert G. Koenig, Jr., St. Charles, both of Mo., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Mar. 23, 1981, Ser. No. 246,271
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—44 **10 Claims**



1. A semiconductor injection laser system comprising an input injection laser diode optically connected to an output injection laser diode wherein the central axes of the input diode and the output diode are substantially parallel and the plane of the junction of the input diode is rotated relative to the plane of the junction of the output diode at an angle sufficient to achieve mode stability in the laser output of the system.

4,380,076

APPARATUS FOR FOUR SIDE TRANSVERSE IRRADIATION OF A REGION

Donald S. Bethune, Mt. Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

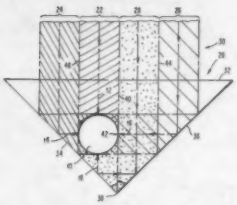
Filed Dec. 31, 1980, Ser. No. 221,599
Int. Cl.³ H01S *3/091*
U.S. Cl. 372—54 **9 Claims**

1. Apparatus for transversely irradiating a region equally from four directions using a single incident beam of substantially collimated radiation, comprising:

perpendicular reflective planes having a common edge and defining a corner region therebetween, said corner region being the region defined by all straight lines extending from one of said reflective planes to the other; and

means defining an irradiated region entirely within said corner region, said irradiated region being suitably posi-

tioned within said corner region such that said irradiated region does not intercept any ray of incident radiation from striking said common edge, said irradiated region being directly irradiated from a first direction by incident radiation, said irradiated region also being simultaneously indirectly irradiated from a second direction by incident radiation reflected from one of said planes, said irradiated



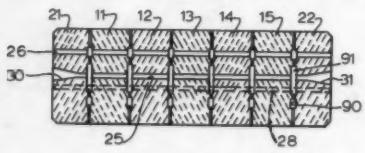
region also being simultaneously indirectly irradiated from a third direction opposite said second direction by incident radiation reflected from the other one of said planes, and said irradiated region being also simultaneously indirectly irradiated from a fourth direction opposite said first direction by incident radiation reflected from both of said planes.

4,380,077

SEGMENTED CERAMIC BORE LASER

William H. McMahan, Salt Lake City, Utah, assignor to American Laser Corporation, Salt Lake City, Utah

Filed Feb. 9, 1981, Ser. No. 232,543
Int. Cl.³ H01S *3/03*
U.S. Cl. 372—62 **1 Claim**



1. A cylindrical-shaped laser tube formed of a plurality of segments secured together and having a discharge bore and gas bypass bores formed through the segments, comprising:

(a) a plurality of ceramic cylindrical central segments with opposed end surfaces, each segment having a central aperture comprising a portion of the tube discharge bore and other apertures parallel to said central aperture and spaced radially outward therefrom and comprising portions of the tube gas bypass bores, each end surface having a first circular depression larger than, concentric with, and extending to and communicating with one end of said portion of said discharge bore and being defined by a surrounding first annular boss, a second annular depression radially spaced from said first circular depression and defined by said first annular boss and a second annular boss extending inwardly from the outer peripheral surface of said segment, one end of each said portion of said gas bypass bores extending to and terminating in said second annular depression with the width thereof being greater than the diameter of said gas bypass bores;

(b) a pair of end segments each having opposed outer and inner surfaces, a central aperture comprising a further portion of the tube discharge bore and other apertures parallel to said end segment central aperture and spaced radially outward therefrom and comprising further portions of the tube gas bypass bores, each said end segment outer surface being flat and surrounding a tapered end portion of said tube discharge bore and each said inner surface of each said end segment having the same formation as and mating that of each said central segment end surface; and

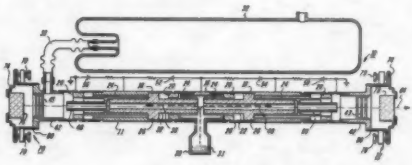
(c) metalizing means integrally joining the respective said segment faces together in sealing relation with said central segments being mated and disposed between said end segments and with the respective said discharge bore and gas bypass bore portions in the segments aligned, said tube discharge bore being thereby sealed off from said bypass gas bores and interrupted by first air gaps disposed at intervals along its length established by said segment first circular depressions and being effective to prevent the establishment of a continuously electrically conductive surface layer along the length of the said laser discharge bore and said bypass gas bores being interrupted by second air gaps spaced radially outward from said first air gaps and disposed at intervals along their length established by said second annular depressions.

4,380,078

SEGMENTED HOLLOW CATHODE LASER WITH SPLIT ANODE

Shing C. Wang, Arcadia, and Randolph W. Hamerdinger, Glendora, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 948,077, Oct. 2, 1978, Pat. No. 4,287,484. This application Jun. 25, 1981, Ser. No. 277,314
The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.
Int. Cl.³ H01S *3/08*
U.S. Cl. 372—62 **10 Claims**



1. A gas laser including an elongated envelope (**11**) containing a gaseous medium, hollow coaxial anode and cathode means (**16,18**) for connection to a voltage supply to produce an electrical discharge in the gaseous medium, and reflector means (**60, 62**) at or near the ends of the envelope, characterized in that the cathode means (**18**) comprises at least two separate cathodes and the anode means comprises at least two short cylindrical anodes centrally located between said separate cathodes.

4,380,079

GAS LASER PREIONIZATION DEVICE

David E. Cohn and Eugene E. Conley, Huntington Beach, Calif., assignors to Northrop Corp., Los Angeles, Calif.

Filed Sep. 12, 1980, Ser. No. 186,663
Int. Cl.³ H01S *3/093*
U.S. Cl. 372—87 **20 Claims**

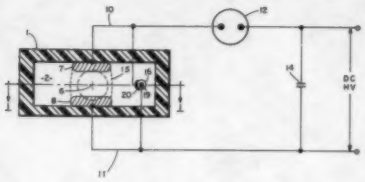
1. A gas laser including:

an elongated housing defining a resonant gas cavity through the center of which an optical axis extends longitudinally;

a pair of opposed electrodes extending longitudinally and disposed on opposite sides of said optical axis; and

means, disposed within said housing, for producing ultraviolet radiation for preionizing gas in said laser comprising a hollow dielectric tube extending parallel to said optical axis, an inner wire conductor in said tube, outer conduc-

tive means comprising one or more conductive strips along the outer surface of said tube, and means for connecting a source of high voltage between said inner wire and said outer conductive means.

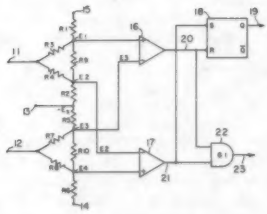


4,380,080

TRI-LEVEL DIFFERENTIAL LINE RECEIVER

Glen D. Rattlingourd, Salt Lake City, Utah, assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,248
Int. Cl.³ H03K 5/13
U.S. Cl. 375—17 **11 Claims**



1. A receiver for receiving RZ tri-level bipolar signals, which signals are transmitted as true and complement signals, from a two-wire transmission line, comprising:

a first resistive network for shifting the bias level of said true signal in a positive direction at a first output and in a negative direction of equal magnitude at a second output;

a second resistive network symmetrical with said first resistive network for shifting the bias level of said compelement signal in a positive direction at a third output and in a negative direction of equal magnitude at a fourth output;

a first comparator having a fifth output and responsive to each change of polarity of the difference of the voltages at said first and third outputs to change the state of said fifth output and thus signal a first binary character; and

a second comparator having a sixth output and responsive to each change of polarity of the difference of the voltages at said second and fourth outputs to change the state of said sixth output and thus signal a second binary character.

4,380,081

DIGITAL RECEIVER FOR FOUR-PHASE-MODULATED CARRIER

Paolo Di Tria, Turin, Italy, assignor to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Aug. 6, 1981, Ser. No. 290,501
Claims priority, application Italy, Aug. 7, 1980, 68262 A/80
Int. Cl.³ H03D 3/22
U.S. Cl. 375—82 **12 Claims**

1. A receiver of phase-modulated carrier waves arriving over a signal path of a telecommunication system in any of four possible phase positions representing dibits of transmitted data words,

comprising:

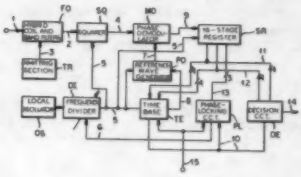
a squarer converting an incoming carrier wave into a phase-modulated square wave;

a generator of a reference square wave having a frequency harmonically related to that of the incoming carrier wave;

phase-demodulation means with inputs connected to said squarer and to said generator for emitting a binary sequence of a configuration determined by the relative phasing of said phase-modulated square wave and said reference square wave;

a source of timing pulses controlling the operation of said generator, said timing pulses having a cadence equal to a multiple of the frequency of said reference square wave;

a shift register connected to said phase-demodulation means for receiving therefrom samples of said binary sequence



which are taken upon the occurrence of said timing pulses, said shift register being stepped by said timing pulses and having a multiplicity of stages accommodating a number of said samples representing at least one full cycle of said reference square wave;

logic circuitry connected to said source and to stage outputs of said shift register for detecting characteristic bit groupings appearing in said stages, indicative of optimum instants for reading the contents of said shift register, said logic circuitry generating a reading command at said optimum instants; and

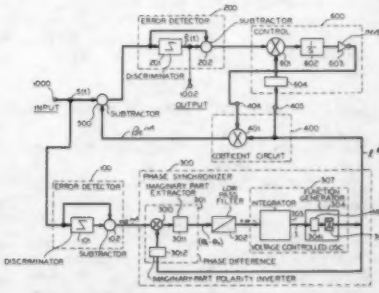
decision means connected to said stage outputs and responsive to said reading command for emitting a dibit decoded from said contents.

4,380,082

DIGITAL SIGNAL RECEIVER WITH FM INTERFERENCE ELIMINATION CAPABILITY

Junji Namiki, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1981, Ser. No. 257,234
Claims priority, application Japan, May 21, 1980, 55-67593; May 21, 1980, 55-67594
Int. Cl.³ H04L 1/00
U.S. Cl. 375—102 **9 Claims**



2. A digital signal receiver comprising error detector means for generating an error signal based upon detected differences between discriminated transmission codes and received digital

baseband signals, synchronizing means responsive to said error signal for synchronizing said error signal with a complex value correcting signal, means for multiplying the output signal of said synchronizing means with a predetermined coefficient signal, subtracting means for extracting said multiplied correcting signal from said digital signal, and control means responsive to said subtracting means for adjusting said coefficient to produce an interference free digital signal.

4,380,083

METHOD OF AND AN ARRANGEMENT IN A TELECOMMUNICATION SYSTEM FOR REGULATING THE PHASE POSITION OF A CONTROLLED SIGNAL IN RELATION TO A REFERENCE SIGNAL

Karl A. I. Andersson, Ljusterö, and Sture G. Roos, Bergshamra, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

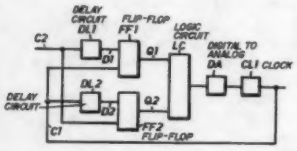
PCT No. PCT/SE79/00194, § 371 Date May 21, 1980, § 102(e) Date Apr. 17, 1980, PCT Pub. No. WO80/00901, PCT Pub. Date May 1, 1980

PCT Filed Sep. 21, 1979, Ser. No. 196,556

Claims priority, application Sweden, Sep. 21, 1978, 7809934

Int. Cl.³ H03L *7/06*

U.S. Cl. 375—120 **2 Claims**



1. Apparatus for regulating the phase position of a controlled signal with respect to a reference signal comprising a source of the reference signal, a first delay means for delaying the reference signal by a given period of time, a second delay means for delaying the controlled signal for said given period of time, a first comparison means having a first input connected to said first delay means to receive the reference signal delayed by said given period of time and a second input to receive the controlled signal for generating a first binary signal whose value is in indication of the relative phases of the received signals, a second comparison means having a first input connected to said second delay means to receive the controlled signal delayed by said period of time and a second input to receive the reference signal for generating a second binary signal whose value is an indication of the relative phases of the received signals, a controllable variable frequency oscillator means for generating the controlled signal, and control means connected to said comparison means for controlling the frequency of said variable frequency oscillator means in accordance with the values of the first and second binary signals.

4,380,084

NUCLEAR BOILER WITH DISMOUNTABLE WATER BOX

Gilles Aubert, Orsay, France, assignor to Commissariat a l'Energie Atomique, Paris, France

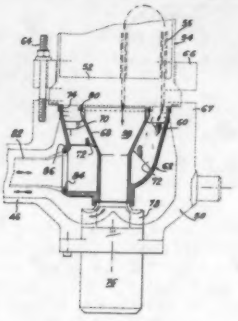
Filed Jul. 23, 1980, Ser. No. 171,412

Claims priority, application France, Jul. 24, 1979, 79 19053

Int. Cl.³ G21C *13/00*

U.S. Cl. 376—204 **8 Claims**

1. A nuclear boiler comprising a vessel having a top closed by a dismountable cover, a cage bearing the core of the reactor and separating the vessel into an inner hot zone and an outer cold zone, at least one steam generator disposed outside the vessel and comprising a tight enclosure, a tube plate separating the enclosure into a primary part, or water box, and a secondary part, and bearing U-shaped tubes whose ends open into two concentric zones of the water box separated by an internal structure, at least one hot connecting pipe and one cold connecting pipe respectively connecting the hot zone and the cold zone of the vessel to each of the concentric zones of the water box, wherein the tube plate, the tubes and the secondary part of



the enclosure of the steam generator define a sub-assembly dismountable from the primary part of the enclosure, the hot connecting pipe being dismountably mounted between the cage and the internal structure of the water box, said internal structure being dismountably mounted in the primary part of the enclosure.

4,380,085

ANGLED GAS CONDUIT

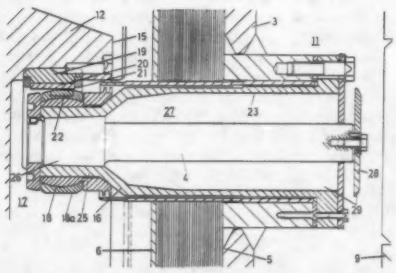
Josef Schoening, Hambruecken; Hans-Georg Schwiers, Ketsch; Claus Elter, Bad Durkheim; Wilfried Stracke, Oftersheim, and Reinhard Mauersberger, Juelich, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Cologne, Fed. Rep. of Germany

Filed Apr. 1, 1980, Ser. No. 136,271

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 2913461; Apr. 4, 1979, 2913462

Int. Cl.³ G21C *3/56*; F15D *1/04*

U.S. Cl. 376—381 **17 Claims**



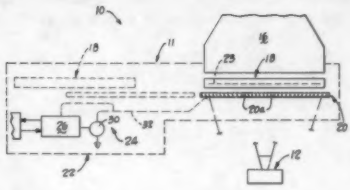
1. An angled conduit comprising a first conduit part and a second conduit part connected at an angle forming an area of deflection for gas flowing within said conduit parts and means for flowing gas under high pressure and at elevated temperature, said means including an apertured plate mounted at an oblique angle within said conduit in said area of deflection, said apertured plate having a plurality of circular passages for directing the flow of gas in said conduit and being mounted on at least three supporting bolts arranged in the wall of said gas conduit wherein each supporting bolt carries a ball joint on its end and protrudes into a recess open in the downward direction of the circumferential surface of said apertured plate.

4,380,086

RADIATION IMAGING SYSTEM WITH CYCLICALLY SHIFTABLE GRID ASSEMBLY

Robert J. Vagi, Broadview Heights, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Filed Nov. 24, 1980, Ser. No. 209,309
Int. Cl.³ A61B 6/00
U.S. Cl. 378—155 13 Claims



1. A method for producing a transparency image of an object subjected to penetrative radiation comprising:

(a) positioning a generally planar image forming element at a predetermined position relative to a source of penetrative radiation;

(b) stationing a grid assembly at an exposure position between the radiation source and the image forming element;

(c) directing penetrative radiation to said image forming element for a predetermined time; and,

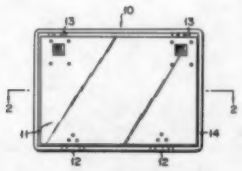
(d) oscillating the grid assembly in a direction generally parallel to said plane at a first relatively constant frequency and altering the extent of grid assembly displacement from said exposure position during successive oscillations by cyclically shifting said grid assembly at a second substantially lower relatively constant frequency so that the grid assembly displacement in one direction of motion from the exposure position is not duplicated for a period which is relatively large compared to said time.

4,380,087

X-RAY FILM CASSETTE

Tsuneo Tanaka, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 3, 1980, Ser. No. 183,816
Claims priority, application Japan, Sep. 6, 1979, 54-114524
Int. Cl.³ G03B 41/16
U.S. Cl. 378—186 6 Claims



1. An X-ray film cassette comprising:

a. a front cover including a front panel and a side wall integral with and surrounding said front panel, each of said front panel and said side wall being formed of carbon fiber reinforced plastics;

b. a bottom cover including a bottom panel and a side wall surrounding said bottom panel;

c. hinge means swingably connecting said front cover and said bottom cover; and

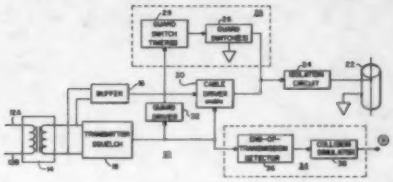
d. a platelike cushion member bonded to the inside of the bottom panel of said bottom cover.

4,380,088

TESTER FOR COLLISION-DETECT CIRCUITRY

Jesse B. Lipcon, Harvard, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 267,394, May 26, 1981. This application Aug. 11, 1981, Ser. No. 292,003
Int. Cl.³ H04B 17/00
U.S. Cl. 455—67 2 Claims



1. In a transceiver for connecting a host device to a multiple access data communications network of the type employing carrier-sense collision detection control techniques, and wherein the transceiver includes a transmitter and a receiver, the transmitter including a squelch circuit for providing a squelch signal to control the enabling and disabling of the transmitter output, and the receiver including means for detecting collisions—i.e., multiple transmitters simultaneously transmitting, the improvement comprising:

(a) end-of-transmission detector means responsive to the squelch signal, for providing an end-of-transmission signal at the conclusion of a transmission; and

(b) collision simulation means, responsive to the end-of-transmission signal, for providing to the receiver a signal simulating a collision,

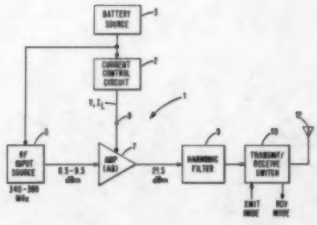
whereby the means for detecting collision is tested automatically at the end of every transmission.

4,380,089

BATTERY-POWERED TRANSMITTER INCLUDING CURRENT CONTROL CIRCUIT

Colin B. Weir, Franklin, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jun. 16, 1980, Ser. No. 159,523
Int. Cl.³ H04B 1/04; H03G 3/20
U.S. Cl. 455—127 14 Claims



1. A transmitter powered by a dc voltage of a battery source and arranged to amplify a rf signal over a range of variations in the value of the voltage of the battery source, said transmitter comprising:

amplifier means arranged to receive said rf signal and having a control input;

control circuit means coupled to the battery source and to the control input of the amplifier means and powered by the battery source;

said control circuit means being operative to produce a control voltage at the control input of the amplifier means

and said amplifier means being operative in response to said control voltage to draw load current from the control circuit means having a value related to the value of the control voltage and to amplify the rf signal received thereby in accordance with the value of the control voltage;

said control circuit means comprising:

sensing circuit means operative to sense the value of load current drawn by the amplifier means and to produce a voltage related thereto; and

control means operative to compare the voltage produced by the sensing circuit means with a voltage varying with variations in the voltage of the battery source and to produce a control voltage related to the difference at the control input of the amplifier means, said control voltage having a value such that the load current drawn by the amplifier means does not exceed a specified maximum value, thereby conserving the battery source.

DESIGN PATENTS

GRANTED APR. 12, 1983

ERRATA

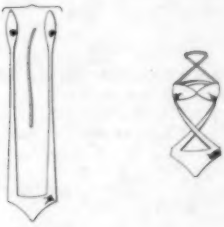
For CLASS	See PATENT NO.
D23–006	268,563

268,539
POTATO PRODUCT
Michael L. Hamann, Caldwell, Id., assignor to J. R. Simplot Company, Boise, Id.
Filed Jan. 12, 1981, Ser. No. 224,309
Term of patent 14 years
Int. Cl. D01—*02*
U.S. Cl. D1—1

268,540
SUSHI
Koki Uno, Tokyo, Japan, assignor to Kyotaru Co., Ltd., Tokyo, Japan
Filed Jan. 2, 1981, Ser. No. 222,162
Term of patent 14 years
Int. Cl. D01—*01*
U.S. Cl. D1—2

268,541
SUSHI
Koki Uno, Tokyo, Japan, assignor to Kyotaru Co., Ltd., Tokyo, Japan
Filed Jan. 2, 1981, Ser. No. 222,163
Term of patent 14 years
Int. Cl. D01—*01*
U.S. Cl. D1—2

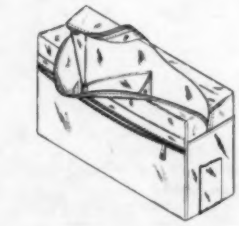
268,542
SWIMMING SUIT
Vicki L. A. Johnson, 1105 S. State St., Provo, Utah 84601
Filed Apr. 22, 1980, Ser. No. 142,792
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—40



268,543
SHOE BASE
Walter Bretschneider, Heidekuppel 16, D-6491 Steinau-Neustall, Fed. Rep. of Germany
Filed Nov. 4, 1980, Ser. No. 203,961
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

268,544
OUTSOLE FOR SPORTS SHOE
Kevin J. Crowley, Newburyport, Mass., assignor to Converse Inc., Wilmington, Mass.
Filed Feb. 4, 1981, Ser. No. 231,522
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

268,545
CARRY CASE FOR SMALL ARTICLES
Robert Weinreb, 510 Broadway, New York, N.Y. 10012
Filed May 16, 1980, Ser. No. 150,428
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—33

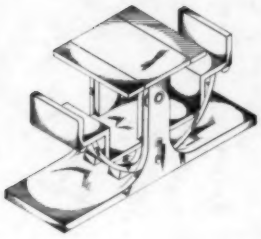


268,546
BICYCLE COVER
Jean-Pierre Edery, 3630 Hancock St., Ste. D, San Diego, Calif. 92110
Filed Nov. 14, 1980, Ser. No. 206,908
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—36

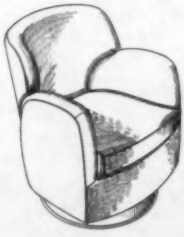
268,547
FISHING ROD CASE
Howard J. Ruckstuhl, 208 Oakview Dr., Kettering, Ohio 45429
Filed Aug. 22, 1980, Ser. No. 180,514
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—38

268,548
HANDBAG
Otto K. Schimmel, Scottsdale, Ariz., assignor to Amba Marketing Systems, Inc., Tempe, Ariz.
Filed Mar. 2, 1981, Ser. No. 239,610
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—48

268,549
COMBINED TABLE AND ROCKABLE CHAIR UNIT
Hsiung-Cheng Liu, No. 15-6, Lane 146, Wen Hua Rd., San Hsia Cheng, Taipei Hsien, Taiwan
Filed Oct. 2, 1980, Ser. No. 193,283
Claims priority, application Taiwan, Apr. 16, 1980, 6930742
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—6



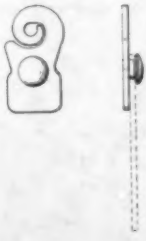
268,550
SWIVEL CHAIR
J. Thayer Coggin, High Point, N.C., assignor to Thayer Coggin Incorporated, High Point, N.C.
Filed Apr. 9, 1979, Ser. No. 28,489
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26



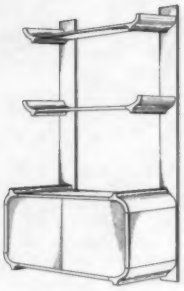
268,551
COMBINED TABLE AND SEATING UNIT
William B. Raftery, Ann Arbor, and Ronald L. Whitwam, Caledonia, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Division of Ser. No. 47,098, Jun. 11, 1979. This application Apr. 5, 1982, Ser. No. 365,353
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—46

268,552
COMBINED TABLE AND SEATING UNIT
William B. Raftery, Ann Arbor, and Ronald L. Whitwam, Caledonia, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Division of Ser. No. 47,099, Jun. 11, 1979. This application Apr. 5, 1982, Ser. No. 365,354
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—46

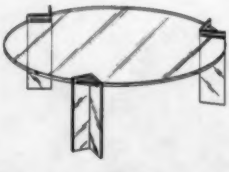
268,553
KEY HANGER
Hanns W. Beier, 26 Clove Brook Rd., Valhalla, N.Y. 10595
Filed Sep. 8, 1980, Ser. No. 185,269
Term of patent 7 years
Int. Cl. D6—*06;* D3—*01;* D8—*08*
U.S. Cl. D6—113



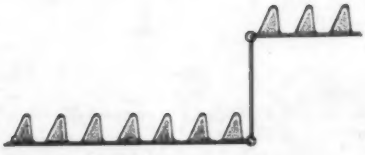
268,554
WALL MOUNTED COMBINED SHELF AND CABINET UNIT
Karl Springer, 425 E. 58th St., New York, N.Y. 10022
Division of Ser. No. 9,773, Feb. 6, 1979, Pat. No. Des. 260,336.
This application Jul. 18, 1980, Ser. No. 170,081
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—127



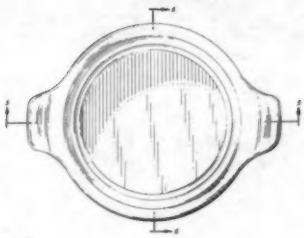
268,555
TABLE
Leon Rosen, Scarsdale, N.Y., assignor to The Pace Collection, Inc., New York, N.Y.
Filed Feb. 7, 1978, Ser. No. 875,918
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

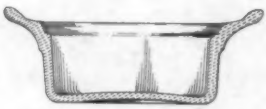


268,556
DISPLAY RACK FOR PACKAGED PRODUCE
Leo F. Wildgen, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.
Filed Jun. 16, 1980, Ser. No. 159,574
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—188



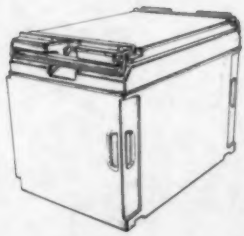
268,557
CASSEROLE DISH OR SIMILAR ARTICLE
George B. Jensen, deceased, late of Syracuse, N.Y., and by Stanley F. Campion, executor, Fayetteville, N.Y., assignors to Syracuse China Corporation, Syracuse, N.Y.
Filed May 11, 1979, Ser. No. 38,245
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—20



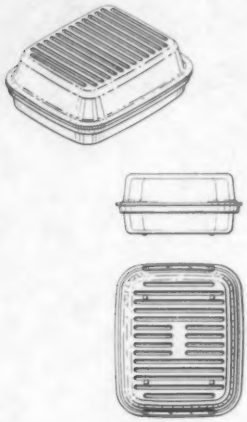


268,558
DRINK BAR
Gary L. Young, 54 Best St., North Fitzroy, Victoria, Australia
Filed Jul. 7, 1980, Ser. No. 166,122
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—71

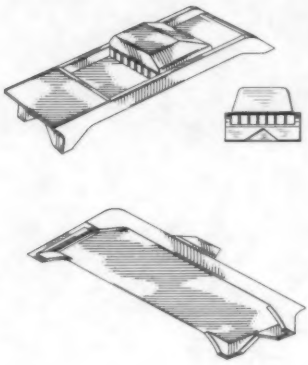
268,559
INSULATED CONTAINER
Jean Cornou, Verrieres le Buisson, France, assignor to Allibert S.A., Grenoble, France
Filed Jan. 23, 1981, Ser. No. 228,693
Claims priority, application Hague, Aug. 13, 1980, DM 000 307
Term of patent 14 years
Int. Cl. D07—*99*; D09—*04*
U.S. Cl. D7—77



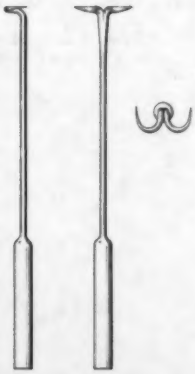
268,560
BREAD STORAGE CONTAINER OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, and Pieter K. J. De Coster, Aalst, both of Belgium, assignors to Dart Industries, Inc., Northbrook, Ill.
Filed Sep. 18, 1980, Ser. No. 188,409
Term of patent 14 years
Int. Cl. D07—*07*
U.S. Cl. D7—92



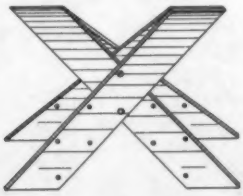
268,562
VEGETABLE CUTTER
John E. Bright, 3621 W. Sunland Dr., Phoenix, Ariz. 85041
Filed May 5, 1980, Ser. No. 146,626
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—381



268,561
BARBECUE COOKING TOOL
Bryce N. Risser, P.O. Box 506, Valley City, N. Dak. 58072
Filed Jan. 19, 1981, Ser. No. 226,123
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—102

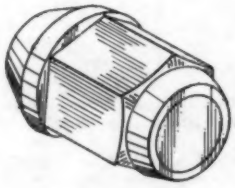


268,563
ADJUSTABLE AND FOLDABLE WOODEN LOG RACK OR THE LIKE
Lawrence J. Gagner, 1 Neptune Park East, Ormand Beach, Fla. 32074
Filed Apr. 18, 1980, Ser. No. 141,681
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D23—138.5

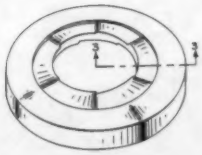


268,564
COMBINED WALL SWITCH AND ESCUTCHEON THEREFOR
Sandra L. Mack, 3498 Yorkshire Rd., Pasadena, Calif. 91107
Filed Jul. 31, 1980, Ser. No. 161,131
Term of patent 14 years
Int. Cl. D8—*09;* D13—*03*
U.S. Cl. D8—353

268,565
LUG NUT
Harold J. Mortus, Twinsburg, Ohio, assignor to Russell, Burdsall & Ward Corporation, Cleveland, Ohio
Filed Aug. 25, 1980, Ser. No. 180,884
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—397

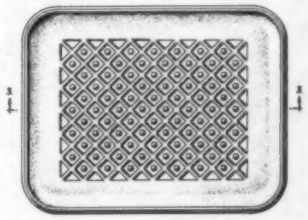


268,566
REVERSIBLE LOCK WASHER
Bengt O. Frieberg, 869 Picacho, La Habra Heights, Calif. 90631
Division of Ser. No. 180,410, Aug. 22, 1980, Pat. No. Des. 263,679. This application Sep. 28, 1981, Ser. No. 305,928
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—399



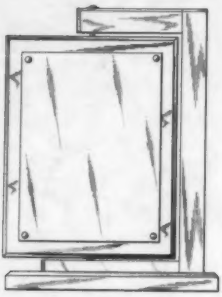
268,567
BOTTLE
Masao Kojima, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed Jan. 6, 1981, Ser. No. 223,029
Claims priority, application Japan, Aug. 21, 1980, 55-34461
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—372

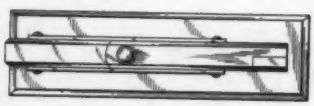
268,568
MEAT PACKAGING TRAY OR THE LIKE
Morell J. Holden, Canandaigua, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Nov. 18, 1980, Ser. No. 207,588
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—425



268,569
JEWELRY PENDANT OR THE LIKE
Wayne C. Heatwole, 104 Leonard St., Dumfries, Va. 22026
Filed Jul. 29, 1980, Ser. No. 173,491
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—81

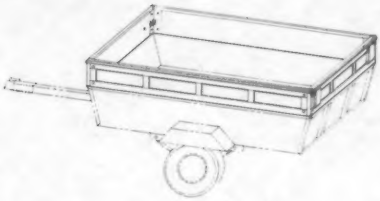
268,570
ROTATING RECTANGULAR-SHAPED PLAQUE
Aaron Wagman, 5 Dunn Rd., Monsey, N.Y. 10952
Filed Dec. 12, 1980, Ser. No. 215,749
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—132



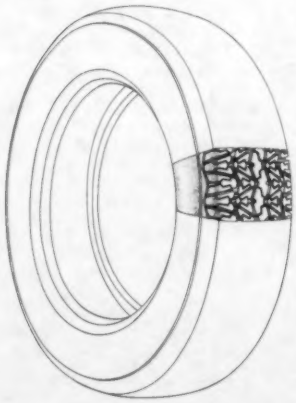


268,571
RABBIT
Doreen N. Roberts, Gwynedd, Wales, assignor to Pendelfin Studios Limited, Lancashire, England
Filed Jun. 17, 1981, Ser. No. 274,686
Claims priority, application United Kingdom, Feb. 3, 1981, 998721
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158

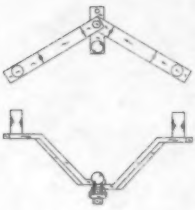
268,572
AUXILIARY SIDES FOR UTILITY TRAILER
David J. Johnson, 486 S. 200 West, Mt. Pleasant, Utah 84647
Filed Oct. 20, 1980, Ser. No. 198,962
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—106



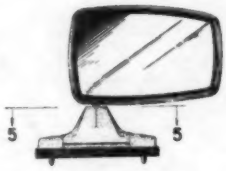
268,573
TIRE
Philippe Grenie, Chateaugay, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Sep. 11, 1981, Ser. No. 301,210
Claims priority, application France, Apr. 23, 1981, 50
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



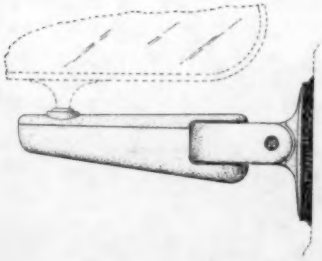
268,574
COMBINED BALL HITCH AND VEHICLE CARRIER FOR GOLF CLUB CARTS HAVING VERTICAL MOUNTING COUPLING
Auborn R. Hampton, 1307 Garth Ave., Decatur, Ala. 35601
Filed Feb. 25, 1980, Ser. No. 124,231
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



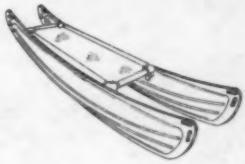
268,575
REAR VIEW MIRROR
Bernard C. Sharp, White Plains, N.Y., assignor to Parker-Hannifin Corporation, Shelton, Conn.
Filed Oct. 27, 1980, Ser. No. 201,152
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187



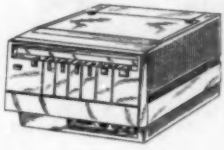
268,576
REAR VIEW MIRROR MOUNTING
Bernard C. Sharp, White Plains, N.Y., assignor to Parker-Hannifin Corporation, Shelton, Conn.
Filed Jan. 2, 1981, Ser. No. 222,123
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187



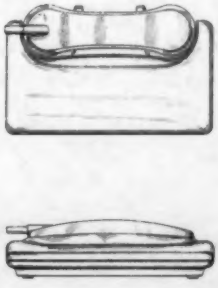
268,577
PADDLING CATAMARAN
Carl Gillberg, 1710 Decker Canyon Rd., Malibu, Calif. 90265
Filed Sep. 5, 1979, Ser. No. 72,687
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—304



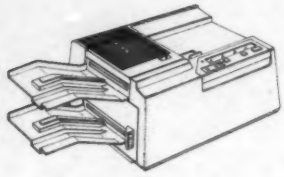
268,578
ADAPTER FOR CONVERTING RECORDED VIDEO SIGNALS FROM ONE TO ANOTHER SIZE CASSETTE
Toshio Ohya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 10, 1980, Ser. No. 205,642
Claims priority, application Japan, May 14, 1980, 55-018898
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—2



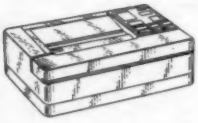
268,579
TELEPHONE
Eric J. Marshall, 5 Carlton Gardens, London SW1, England
Filed Jul. 28, 1980, Ser. No. 173,086
Claims priority, application United Kingdom, Feb. 5, 1980, 993474
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



268,580
FACSIMILE RECORDER AND TRANSCEIVER
Nobuki Matsumoto; Manzo Yoshihama, both of Yokohama, and Fumiyo Kojima, Hiratsuka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jan. 9, 1981, Ser. No. 223,754
Claims priority, application Japan, Jul. 14, 1980, 55-028174
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—94



268,581
FACSIMILE TRANSCEIVER OR THE LIKE
Nobuo Kikuchi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 18, 1981, Ser. No. 235,759
Claims priority, application Japan, Aug. 21, 1980, 55-34257
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—94

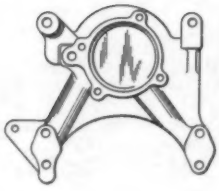


268,582
FACSIMILE TRANSCEIVER OR THE LIKE
Nobuo Kikuchi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 18, 1981, Ser. No. 235,665
Claims priority, application Japan, Aug. 21, 1980, 55-34258
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—94

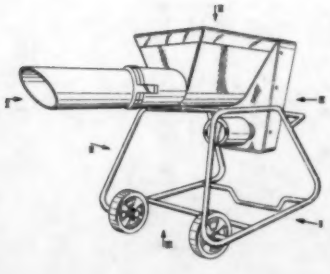
268,583
CONTROL CONSOLE
George S. Whaley, Eastlake, and Thomas L. Willmott, Russell, both of Ohio, assignors to The Babock & Wilcox Company, New Orleans, La.
Filed Apr. 9, 1981, Ser. No. 252,705
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—103

268,584
PERSONAL COMPUTER
Steven P. Jobs, Los Gatos; Jerrold C. Manock, Palo Alto; Dean A. Hovey, Los Altos, and David M. Kelley, Palo Alto, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Nov. 3, 1980, Ser. No. 203,502
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—106

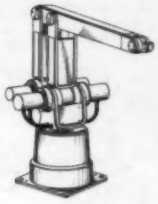
268,585
WATER PUMP HOUSING
John Drakulic, Box 482, 1st St., Trafford, Pa. 15085
Filed Oct. 28, 1980, Ser. No. 201,512
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—5



268,586
MORTAR MIXER
Rolf Baum, Kirchzarten, Fed. Rep. of Germany, assignor to Mathis System-Technik GmbH, Merdingen, Fed. Rep. of Germany
Filed Oct. 6, 1980, Ser. No. 194,579
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, MR Bd.II NO3Bs
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—19

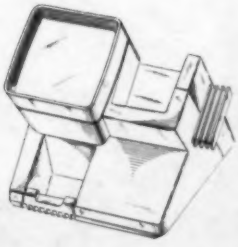


268,587
INDUSTRIAL ROBOT
Michinaga Kono; Yoshio Matsumoto, both of Yokohama; Hirosuke Katsumi, Tokyo, and Fumio Fukuchi, Funabashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 4, 1980, Ser. No. 137,492
Claims priority, application Japan, Oct. 5, 1979, 54-41673; Feb. 12, 1980, 55-4391; Mar. 26, 1980, 55-11412
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—122

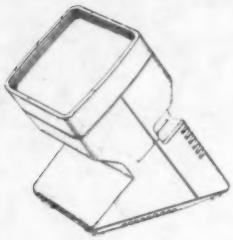


268,588
PORTABLE ORE SEPARATING BOWL
Wilbert H. Cubbison, and Flossie E. Cubbison, both of P.O. Box 322, Canyonville, Oreg. 97417
Filed Mar. 10, 1981, Ser. No. 176,066
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—147

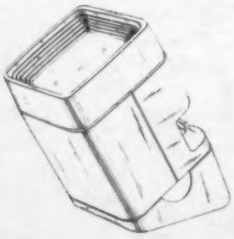
268,589
SLIDE VIEWER
Paul D. Miller, and Martin Thaler, both of New York, N.Y., assignors to View-Master International Group, Portland, Oreg.
Filed Jan. 23, 1981, Ser. No. 227,869
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—17



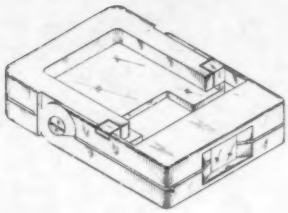
268,590
TABLETOP SLIDE VIEWER
Paul D. Miller, and Martin Thaler, both of New York, N.Y., assignors to View-Master International Group, Portland, Oreg.
Filed Feb. 20, 1981, Ser. No. 236,094
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—17



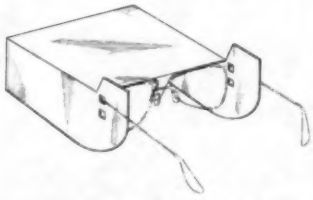
268,591
TRANSPARENCY VIEWER
Paul D. Miller, New York, N.Y., and Richard M. Joffe, North Bergen, N.J., assignors to View-Master International Group, Portland, Oreg.
Filed Feb. 20, 1981, Ser. No. 236,095
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—17



268,592
FOLDING TRANSPARENCY VIEWER
Paul D. Miller, New York, N.Y., and Richard M. Joffe, North Bergen, N.J., assignors to View-Master International Group, Portland, Oreg.
Filed Jan. 26, 1981, Ser. No. 228,639
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—18

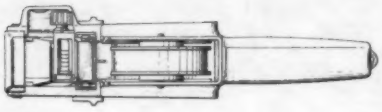


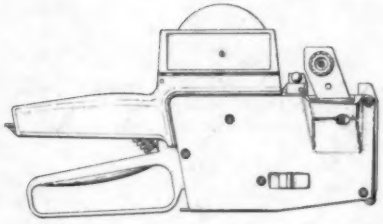
268,593
HOOD FOR INSTRUMENT FLIGHT TRAINING
C. Cameron Harper, 3644 Nobscott Ct., Apt. 1A, Indianapolis, Ind. 46222
Filed Sep. 8, 1980, Ser. No. 185,260
Term of patent 14 years
Int. Cl. D2—*3;* D16—*06*
U.S. Cl. D16—123



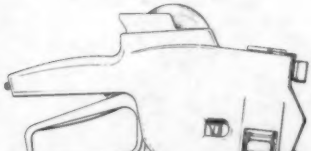
268,594
LIGHT DISPERSING PRISM ATTACHABLE TO A WINDOW, OR SIMILAR ARTICLE
Ronald L. Chyba, 3770 Monroe St., Riverside, Calif. 92504
Filed Sep. 22, 1980, Ser. No. 189,786
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—137

268,595
LABELING MACHINE
Eugene W. Beers, Lafayette, Calif., assignor to Esselte Pendaflex Corp., Garden City, N.Y.
Filed Dec. 12, 1980, Ser. No. 215,698
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—19

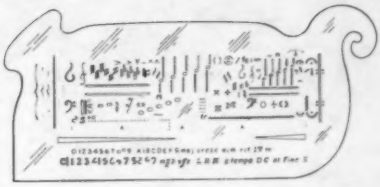




268,596
LABELING MACHINE
Eugene W. Beers, Lafayette, Calif., assignor to Esselte Pendaflex Corp., Garden City, N.Y.
Filed Feb. 4, 1981, Ser. No. 231,360
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—19

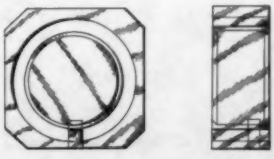


268,597
DRAWING TEMPLATE
David Spence, Granada Hills, Calif., assignor to Berol Corporation, Danbury, Conn.
Filed Jul. 24, 1980, Ser. No. 171,844
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—39

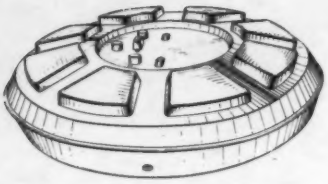


268,598
FELT PEN
Takeshi Mizutani, Kuwana, and Makoto Mizuno, Nagoya, both of Japan, assignors to Shachihata Industrial Co., Ltd., Aichi, Japan
Filed Nov. 14, 1980, Ser. No. 206,978
Claims priority, application Japan, May 15, 1980, 55-19092
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—43

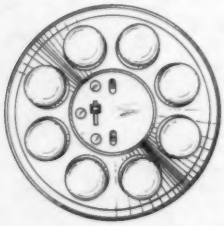
268,599
PAPERWEIGHT
Michael F. Cox, 1311 Dixie Hwy., Pompano Beach, Fla. 33060
Filed Oct. 24, 1980, Ser. No. 200,525
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—96



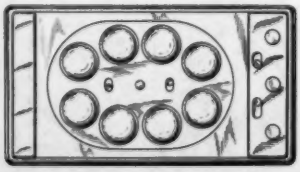
268,600
ELECTRONIC MEMORY GAME HOUSING
Lap Lee, Hong Hong, Hong Kong, assignor to Applied Industrial Company Limited, Hong Kong, Hong Kong
Filed Oct. 14, 1980, Ser. No. 196,463
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



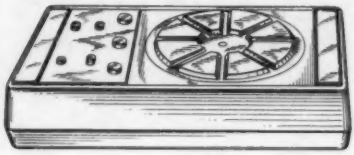
268,601
ELECTRONIC MEMORY GAME HOUSING
Lap Lee, Hong Kong, Hong Kong, assignor to Applied Industrial Company Limited, Hong Kong, Hong Kong
Filed Oct. 14, 1980, Ser. No. 196,464
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



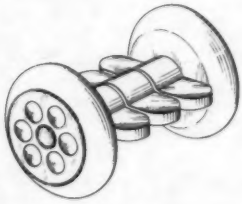
268,602
ELECTRONIC MEMORY GAME HOUSING
Lap Lee, Hong Kong, Hong Kong, assignor to Applied Industrial Company Limited, Hong Kong, Hong Kong
Filed Oct. 14, 1980, Ser. No. 196,465
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



268,603
ELECTRONIC MEMORY GAME HOUSING
Lap Lee, Hong Kong, Hong Kong, assignor to Applied Industrial Company Limited, Hong Kong, Hong Kong
Filed Oct. 14, 1980, Ser. No. 196,466
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



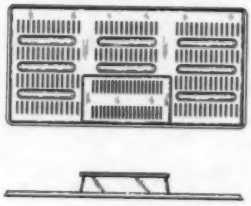
268,604
SPINNING TOY
Richard A. Chase, Baltimore; Lawrence B. Grubb, Monkton, both of Md., and David M. Williams, New York, N.Y., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.
Filed Oct. 30, 1980, Ser. No. 202,387
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—92



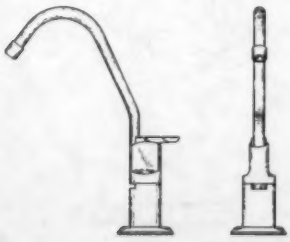
268,605
PULL TOY
Ralph A. Randolph, Box 36, Bushnell, Nebr. 69128
Filed Nov. 28, 1980, Ser. No. 211,236
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—165

268,606
STUFFED BEAR WITH SIMULATED PROSTHETIC LIMB
Margaret K. Gibbons, 418 Walker St., Lowell, Mass. 01851
Filed Mar. 20, 1981, Ser. No. 245,911
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—159

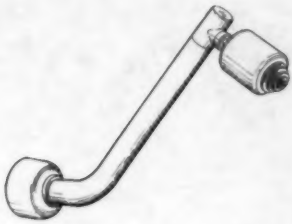
268,607
AQUARIUM FILTER
Richard J. Malik, 2721 Morin Grove, Erie, Mich. 48133
Filed Dec. 1, 1980, Ser. No. 211,515
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



268,608
FAUCET
Anthony C. Wilcock, 75 E. Palm Ave., Burbank, Calif. 91502
Filed Oct. 14, 1980, Ser. No. 197,144
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—23



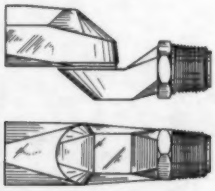
268,609
SHOWER HEAD
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Apr. 20, 1981, Ser. No. 255,530
Claims priority, application Australia, Dec. 18, 1980, 82,964
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



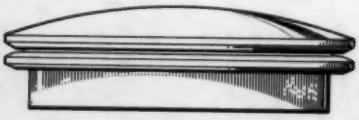
268,610
HAND SHOWER
Bruce R. Thompson, Tranmere, Australia, assignor to UPL Group Limited, Brisbane, Australia
Filed Apr. 20, 1981, Ser. No. 255,538
Claims priority, application Australia, Jan. 5, 1981, 82,979
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

268,611
HAND SHOWER
Odo Klose, Wuppertal, Fed. Rep. of Germany, assignor to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany
Filed Aug. 27, 1981, Ser. No. 296,623
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1981, MR 7136
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

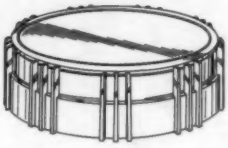
268,612
SWIVEL CONNECTOR FOR HOSE OR THE LIKE
Grenville G. Sutcliffe, Villa Ridge, Mo., assignor to Husky Corporation, Pacific, Mo.
Filed Jun. 16, 1980, Ser. No. 160,088
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43



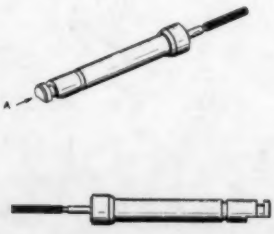
268,613
CONTAINER FOR AIR FRESHENER
Robert C. Beacham, Pleasanton, Calif., assignor to The Clorox Company, Oakland, Calif.
Filed Nov. 3, 1980, Ser. No. 203,190
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



268,614
AIR FRESHENER OR SIMILAR ARTICLE
Fritz von Philipp, Neuburg, and Georg Schimanski, Hagen, both of Fed. Rep. of Germany, assignors to Globol-Werk GmbH, Neuburg, Fed. Rep. of Germany
Filed Dec. 22, 1980, Ser. No. 219,152
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, MR435
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



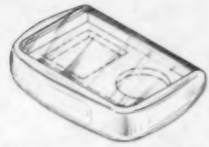
268,615
COMBINED DENTAL PIN AND CHUCK
Anthony J. Biggs, 9 Westdown, Great Brookham, Surrey, England
Filed Aug. 29, 1980, Ser. No. 182,653
Claims priority, application United Kingdom, Apr. 24, 1980, 994605
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10

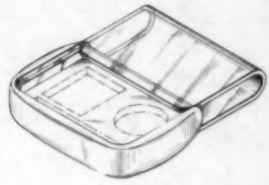


268,616
ELECTRIC SHAVER
Roland Ullmann, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany
Filed Feb. 23, 1981, Ser. No. 237,036
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1980, 73 MR 8917
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—49

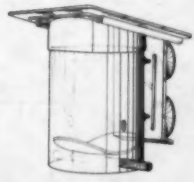
268,617
ELECTRIC SHAVER
Florian Seiffert, Grüenwald, Fed. Rep. of Germany, and Noboru Abe, Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Dec. 30, 1980, Ser. No. 221,689
Claims priority, application Japan, Jul. 7, 1980, 55-27247
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—51

268,618
COMPACT
Andrew Napolitane, 350 E. 52nd St., New York, N.Y. 10022
Filed Feb. 12, 1981, Ser. No. 233,984
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—78



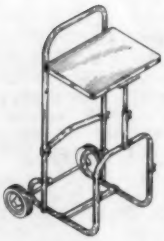


268,619
BIRD FEEDER
Morton L. Blasbalg, 26 Sandro Dr., Warwick, R.I. 02886
Filed Oct. 10, 1978, Ser. No. 949,813
The portion of the term of this patent subsequent to Apr. 12, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—15

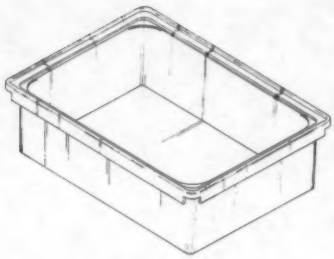


268,620
MATERIALS HANDLING CART
Charles P. Schreiner, Saugatuck, Mich., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Dec. 4, 1980, Ser. No. 212,947
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—21

268,621
CART FOR HOLDING REFUSE BAG
Louis G. Marini, and Thomas O. Marini, both of P.O. Box 6, Blackwood, N.J. 08012
Filed Jul. 21, 1980, Ser. No. 171,018
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—26



268,622
MATERIAL HANDLING TOTE TRAY
Richard H. Wolters; William C. Anderson, both of Grand Rapids; Charles R. Tyke, Ada, and Charles P. Schreiner, Saugatuck, all of Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Dec. 4, 1980, Ser. No. 212,948
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D34—40



268,623
CREMAIN VAULT
Gerald A. Dercks, and Michael J. Dercks, both of 4228 Park Ave. S., Minneapolos, Minn. 55407
Filed Dec. 12, 1980, Ser. No. 216,021
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D99—5

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF APRIL, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Dick Company: *See*—
Halm, James M., 4,379,823, Cl. 430-83.000.

Abbott Laboratories: *See*—
Cooper, Billy H., 4,379,841, Cl. 435-34.000.

Abidin, Anwar: *See*—
Bianchi, Valerio; Abidin, Anwar; and Thonnessen, Dieter, 4,379,770, Cl. 261-142.000.

ACF Industries, Incorporated: *See*—
Saka, Hamid J., 4,379,557, Cl. 277-59.000.

Acme General Corporation: *See*—
Johnson, John R.; and Brydolf, Robert, 4,379,603, Cl. 312-320.000.

Adamoski, William; and Hotchkiss, Alan B., to Pitney Bowes Inc. Inserter with improved ram mechanism. 4,379,383, Cl. 53-266.00A.

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Adell, Robert, to U.S. Product Development Company. Edge guard. 4,379,377, Cl. 49-462.000.

Adler, David: *See*—
Yang, Chi C.; Madan, Arun; Ovshinsky, Stanford R.; and Adler, David, 4,379,943, Cl. 136-249.000.

AG Industries International, Ltd.: *See*—
Thedford, Dale E.; and Wilson, Gil C., 4,379,440, Cl. 119-159.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Dedden, Hubert; and Pfingst, Jurgen, 4,379,632, Cl. 355-68.000.
Helling, Gunter; Ohlschlager, Hans; Himmelmann, Wolfgang; and Beck, Manfred, 4,379,838, Cl. 430-518.000.
Krafft, Werner; Helling, Gunter; Matschke, Guunther; and Boie, Immo, 4,379,829, Cl. 430-215.000.
Lapp, Otto; von Rintelen, Harald; Moll, Franz; and Endres, Lothar, 4,379,837, Cl. 430-434.000.
Liebe, Werner; Lohmer, Karl; and Pelz, Willibald, 4,379,828, Cl. 430-212.000.
Schnoring, Hildegard; Schranz, Karl-Wilhelm; and Koepke, Gunther, 4,379,836, Cl. 430-377.000.

Ahmed, Fahim, to International Telephone and Telegraph Corporation. Distributed control memory network. 4,379,950, Cl. 179-18.0ES.

Ahrens, Paul W., to Miracle Recreation Equipment Company. Playground tube slide. 4,379,551, Cl. 272-56.50R.

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Dalton, Augustine I., Jr.; and Skinner, Ronald W., 4,379,778, Cl. 423-584.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Toyoda, Minoru, 4,379,394, Cl. 70-456.00R.

Akzo NV: *See*—
Fickel, Walter; and Ries, Gerhard, 4,379,860, Cl. 521-61.000.

Albo, Ronald T.; Carney, James E., Jr.; and Riehl, Robert E., to Caterpillar Tractor Co. Shuttle drive assembly. 4,379,527, Cl. 242-4.0BE.

Alemanni, James C., to Gibson-Egan Company. Integrated circuit carrier. 4,379,505, Cl. 206-329.000.

Alex Friedmann Kommanditgesellschaft: *See*—
Tomsu, Peter, 4,379,520, Cl. 236-49.000.

Alexander, Lee J.; Vanberg, Harold E.; and King, Clyde E., to Horticultural Printers/Carscallen Nursery Label Company. Plant tag. 4,379,372, Cl. 40-10.00C.

Alexanian, Vazken A.; Forgione, Peter S.; and Chang, Laurence W., to American Cyanamid Company. Manufacture of isocyanates. 4,379,767, Cl. 260-453.00P.

Allen, Donald P.: *See*—
Long, Ernest L.; Duvall, William S.; and Allen, Donald P., 4,380,009, Cl. 340-825.550.

Allen, George R.: *See*—
Taylor, Merrick W.; Allen, George R.; and Strong, Terence, 4,379,583, Cl. 296-1.00S.

Allen, Louis B., Jr.; and Koenig, Herbert G., Jr., to McDonnell Douglas Corporation. Mode stable injection laser diode. 4,380,075, Cl. 372-44.000.

Allied Paper, Incorporated: *See*—
Shaw, Michael J., 4,379,822, Cl. 430-62.000.

Allison, Robert, to Mac Equipment, Inc. Vacuum sequencing system with weight controlled material draw cycle. 4,379,663, Cl. 406-23.000.

Aluminum Company of America: *See*—
Hildeman, Gregory J.; and Sanders, Robert E., Jr., 4,379,719, Cl. 419-60.000.

ALZA Corporation: *See*—
Campbell, Patricia S.; and Chandrasekaran, Santosh K., 4,379,454, Cl. 604-897.000.

American Cyanamid Company: *See*—
Alexanian, Vazken A.; Forgione, Peter S.; and Chang, Laurence W., 4,379,767, Cl. 260-453.00P.
Parekh, Girish G.; Blank, Werner J.; and Schirmann, Peter J., 4,379,911, Cl. 528-245.000.

American Hoechst Corporation: *See*—
Corso, Anthony J.; Colavito, Kathleen M.; and Phillips, Thomas S., 4,379,937, Cl. 546-155.000.
Ong, Helen H.; and Profitt, James A., 4,379,932, Cl. 546-17.000.
Ong, Helen H.; and Profitt, James A., 4,379,933, Cl. 546-17.000.

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Rao, Pemmaraju N.; Purdy, Robert H.; and Moore, Perry H., Jr., 4,379,779, Cl. 436-543.000.
Rao, Pemmaraju N., 4,379,780, Cl. 436-543.000.

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Fruitstone, Mitchell J.; Tilly, Michele M.; and Pixton, Betty G., 4,379,847, Cl. 436-8.000.

American Laser Corporation: *See*—
McMahan, William H., 4,380,077, Cl. 372-62.000.

American Sunroof Corporation: *See*—
Kaltz, Milton C.; Chojnowski, Edward M.; Garascia, David C.; Bauer, Barney J.; and George, Richard D., 4,379,586, Cl. 296-222.000.

AMF Incorporated: *See*—
Rose, John A.; and Dyer, Keith, 4,379,666, Cl. 409-110.000.

Amimoto, Yoshio; and Tatemoto, Masayoshi, to Daikin Kogyo Co., Ltd. Polyfluoroallyl ethers and their production and use. 4,379,901, Cl. 526-247.000.

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Clark, Richard P.; Frantz, Robert H.; Hawk, Gary W.; and Root, John A., 4,379,606, Cl. 339-17.0CF.
Olsson, Billy E.; and Kam, Lit-Yan, 4,379,608, Cl. 339-75.0MP.

Amtel Systems Corporation: *See*—
Long, Ernest L.; Duvall, William S.; and Allen, Donald P., 4,380,009, Cl. 340-825.550.

Amundsen, Joseph; Goodwin, Robert J.; and Wetzel, William H., to Reichhold Chemicals, Incorporated. Water soluble pentachlorophenol and tetrachlorophenol wood treating systems containing fatty acid amine oxides. 4,379,810, Cl. 428-541.000.

Andersen, Heinz-Erhardt; Brebels, Jaek J.; Matschke, Klaus; and Scheier, Franz, to Hoechst Aktiengesellschaft. Process for the production of biaxially stretched and embossed film composed of vinyl chloride polymers. 4,379,774, Cl. 264-284.000.

Anderson, Larry C.; Lausch, Robert C.; and Sydorko, Peter J., to Armstrong World Industries, Inc. Method of coating an open weave fabric. 4,379,730, Cl. 156-324.000.

Andersson, Karl A. I.; and Roos, Sture G., to Telefonaktiebolaget L M Ericsson. Method of and an arrangement in a telecommunication system for regulating the phase position of a controlled signal in relation to a reference signal. 4,380,083, Cl. 375-120.000.

Andoh, Sadanari; Maeda, Junji; Fukushima, Kiyoshi; Yoneda, Hiroichi; and Jinushi, Naotomo, to Sanyo Denki Kabushiki Kaisha. Ink droplet projecting device and an ink jet printer. 4,380,018, Cl. 346-140.00R.

Andrews, Richard J., to Lucas Industries Limited. Fuel injection nozzles. 4,379,524, Cl. 239-533.800.

Anelva Corporation: *See*—
Nakatsukasa, Masashi; and Takahashi, Nobuyuki, 4,379,743, Cl. 204-298.000.

Angelo, Eugene V.; and Pratap, Prem, to Elliott Turbomachinery Company, Inc. Turbine trip valve mechanism. 4,379,544, Cl. 251-74.000.

Angelucci, Joseph L.: *See*—
Angelucci, Thomas L., Sr.; and Angelucci, Joseph L., 4,380,042, Cl. 361-421.000.

Angelucci, Thomas L., Sr.; and Angelucci, Joseph L. Printed circuit lead carrier tape. 4,380,042, Cl. 361-421.000.

Anzai, Makoto, to Nissan Motor Company, Limited. System for controlling the air-fuel ratio in a combustion engine. 4,379,441, Cl. 123-440.000.

Appelen, John T.: *See*—
Jenkins, Allan D.; Appelen, John T.; and Lind, Nils, 4,379,371, Cl. 37-104.000.

Arbuthnot, Gerald R.: *See*—
Walling, Jong-Hein; Arbuthnot, Gerald R.; and Gervais, Michel, 4,379,435, Cl. 118-643.000.

Arioli & C.S.r.l.: *See*—
Centis, Sergio, 4,379,392, Cl. 68-5.00C.

Arita, Kaneto: *See*—
Pastor, Antonio C.; Pastor, Ricardo C.; and Arita, Kaneto, 4,379,733, Cl. 156-616.00R.

Armour and Company: *See*—
Theiler, Richard F., 4,379,794, Cl. 426-266.000.

Armstrong World Industries, Inc.: *See*—
Anderson, Larry C.; Lausch, Robert C.; and Sydorko, Peter J., 4,379,730, Cl. 156-324.000.
Mearig, Stephen G., 4,379,737, Cl. 204-11.000.

Arsenault, Serge. Auxiliary ice skate blade. 4,379,563, Cl. 280-7.100.

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Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,379,888, Cl. 525-211.000.

Asahi Glass Company, Ltd.: *See*—
Yamabe, Masaaki; Munekata, Seiji; Kumai, Seisaku; and Kaneko, Isamu, 4,379,768, Cl. 260-544.00F.

Asano, Makoto; Tanabe, Yoshimitu; and Murakami, Hisamichi, to Mitsui Toatsu Chemicals, Inc. Color-developer for pressure-sensitive sheets. 4,379,897, Cl. 525-506.000.

Asano, Shunji: *See*—
Takanashi, Yukio; Yakabe, Tooru; and Asano, Shunji, 4,379,980, Cl. 313-446.000.

Asari, Akira; Noyori, Tatsuhiko; and Takehata, Tetsuro, to Kabushiki Kaisha Kobe Seiko Sho. Pull-back type indirect extrusion press. 4,379,398, Cl. 72-273.500.

Ashitaka, Hidetomo; Oizumi, Kyohei; Jinda, Kazuya; and Inaishi, Kazutoshi, to Ube Industries, Ltd. Process for producing polybutadine rubber with enhanced mechanical strength. 4,379,889, Cl. 525-247.000.

Atlantic Richfield Company: *See*—
Younes, Usama E., 4,379,877, Cl. 524-123.000.

Aubert, Gilles, to Commissariat a l'Energie Atomique. Nuclear boiler with dismountable water box. 4,380,084, Cl. 376-204.000.

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Rion, Claude; and Ruckheim, Winfried, 4,379,539, Cl. 248-371.000.

Austel, Volkhard: *See*—
Heider, Joachim; Austel, Volkhard; Eberlein, Wolfgang; Kadatz, Rudolf; and Lillie, Christian, 4,379,788, Cl. 424-251.000.

Automated Food Systems, Inc.: *See*—
Walser, Glenn E., 4,379,795, Cl. 426-304.000.

Ayerst, McKenna & Harrison Ltd.: *See*—
Gauthier, Jean A.; and Jirkovsky, Ivo, 4,379,926, Cl. 544-122.000.

Azegami, Hitoshi: *See*—
Ota, Hiroshi; Horigome, Eiji; and Azegami, Hitoshi, 4,380,035, Cl. 360-130.330.

B. F. Goodrich Company, The: *See*—
Mahan, Richard S.; Tritt, Paul G.; and Ward, James H., Jr., 4,379,579, Cl. 294-83.00R.

Bacrania, Kantilal, to Burroughs Corporation. Disc-drive head positioning systems. 4,380,033, Cl. 360-77.000.

Baerst, Christian: *See*—
Woock, Jean P.; and Baerst, Christian, 4,379,419, Cl. 83-875.000.

Bailey, Fay W., to Phillips Petroleum Company. Copolymer blend of improved impact resistance. 4,379,884, Cl. 525-96.000.

Bailey, Paul F., Jr. Facility for conducting ophthalmological examinations. 4,379,626, Cl. 351-200.000.

Bakken, Gordon J., to Fern Engineering. Turbine seal. 4,379,560, Cl. 277-236.000.

Balbinot, Renzo, to Nordica S.p.A. Device for adjusting the inclination of the cuff or ankle covering portion of a footwear article, in particular a ski boot. 4,379,370, Cl. 36-121.000.

Baldwin, Floyd G.; and Evans, Donald E., to McDonnell Douglas Corporation. Pallet restrain system. 4,379,535, Cl. 244-137.00R.

Baldwin Piano & Organ Company: *See*—
Munch, Walter; and Uetrecht, Dale M., 4,379,422, Cl. 84-1.190.

Ball Corporation: *See*—
Deane, David W., 4,380,025, Cl. 358-106.000.

Ball, Harold M.; and Beach, Robert G., to Ramsey Winch Company. Winch clutch. 4,379,502, Cl. 192-71.000.

Bando, Hideharu: *See*—
Shimbashi, Ichiro; Ikegami, Hiroshi; and Bando, Hideharu, 4,379,547, Cl. 266-103.000.

Banerjee, Subrata: *See*—
Henry, Francis W., Jr.; and Banerjee, Subrata, 4,379,866, Cl. 523-140.000.

Barlogis, Rene, to Societe Francaise d'Agrafage Industriel - Sofragraf. Device for dispensing fused materials such as thermoplastic adhesives. 4,379,516, Cl. 222-146.0HE.

Barnes, David I.: *See*—
Robinson, Joseph G.; Barnes, David I.; and Carswell, Angela M., 4,379,896, Cl. 525-472.000.

Barnet, Barry M.: *See*—
Fisher, Warren H., Jr.; and Barnet, Barry M., 4,379,485, Cl. 165-110.000.

Baron, Howard C. Infusion system with self-generating pressure assembly. 4,379,453, Cl. 604-145.000.

Barry, William L., to Vapor Corporation. Ambient air timing device. 4,379,680, Cl. 417-46.000.

Bartz, Wilfried: *See*—
Konietzny, Alfred; and Bartz, Wilfried, 4,379,890, Cl. 525-332.800.

BASF Aktiengesellschaft: *See*—
Graser, Fritz; and Seybold, Guenther, 4,379,934, Cl. 546-37.000.
Weitz, Hans-Martin; and Fischer, Rolf, 4,379,756, Cl. 252-411.00R.

Baskent, Feyyaz O.; and Sandner, Michael R., to Union Carbide Corporation. Tertiary amine catalyst mixtures useful in cellular polyurethane formation. 4,379,757, Cl. 252-426.000.

Basterfield, Ernest P.; and Basterfield, Llewellyn P., to Chern Developments (Proprietary) Limited. Pressure vessel fastening means. 4,379,513, Cl. 220-325.000.

Basterfield, Llewellyn P.: *See*—
Basterfield, Ernest P.; and Basterfield, Llewellyn P., 4,379,513, Cl. 220-325.000.

Bauer, Barney J.: *See*—
Kaltz, Milton C.; Chojnowski, Edward M.; Garascia, David C.; Bauer, Barney J.; and George, Richard D., 4,379,586, Cl. 296-222.000.

Bauer, Siegfried; and Boebel, Manfred, to Richard Wolf GmbH. Trocar sleeves having a ball valve. 4,379,458, Cl. 604-264.000.

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Baur, Robert P. Animal feeder. 4,379,439, Cl. 119-52.00B.

Bausch & Lomb Incorporated: *See*—
Dounce, George H.; and Moore, John A., 4,379,965, Cl. 219-521.000.

Baxter, Donald J.; and Childress, Hugh L., Jr., to Marquette Metal Products Co. Stall sensing circuit for shaded pole motors. 4,379,986, Cl. 318-434.000.

Baxter Travenol Laboratories, Inc.: *See*—
Cunningham, Joel, 4,379,472, Cl. 138-89.000.
DeVries, James H., 4,379,452, Cl. 604-6.000.

Bayer Aktiengesellschaft: *See*—
Haas, Peter; and Freitag, Hans-Albrecht, 4,379,861, Cl. 521-115.000.
Samaritter, Reinhard; Schoberth, Winfried; and Volland, Robert, 4,379,856, Cl. 521-51.000.
Stemmler, Ingo; Muller, Hanns P.; and Wagner, Kuno, 4,379,905, Cl. 528-73.000.
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Bayerische Motoren Werke A.G.: *See*—
Hauslein, Siegfried; Steinberger, Hans; Heigl, Willibald; Scheichl, Georg; and Kauderer, Erwin, 4,379,352, Cl. 5-471.000.

Bayly Engineering Limited: *See*—
Krajewski, Zdzistaw A. A., 4,380,010, Cl. 343-113.00R.

Beach, Robert G.: *See*—
Ball, Harold M.; and Beach, Robert G., 4,379,502, Cl. 192-71.000.

Beardsley, Brent C.; and Brailey, Allen C., to International Business Machines Corporation. Error control in a hierarchical system. 4,380,067, Cl. 371-11.000.

Beck, Manfred: *See*—
Helling, Gunter; Ohlschlager, Hans; Himmelmann, Wolfgang; and Beck, Manfred, 4,379,838, Cl. 430-518.000.

Beckman Instruments, Inc.: *See*—
Harman, John N., III, 4,379,402, Cl. 73-23.000.

Beer, Gary L.; and Chemtob, Elie, to Occidental Research Corporation. Process for reducing aluminum and fluorine in phosphoric acids. 4,379,776, Cl. 423-321.00R.

Bell & Howell, Company: *See*—
Hainsworth, Thomas E.; and Houskamp, Robert W., 4,379,497, Cl. 180-168.000.

Bell, Ronald L.: *See*—
Borden, Peter G.; Bell, Ronald L.; and Hyder, Syed B., 4,379,944, Cl. 136-259.000.

Bell Telephone Laboratories, Incorporated: *See*—
Fleming, James W., Jr.; and Shiever, John W., 4,379,616, Cl. 350-96.340.
Kohl, Paul A., 4,379,738, Cl. 204-55.00R.

Bellows, Richard J.: *See*—
Tsien, Hsue C.; Newby, Kenneth R.; Grimes, Patrick G.; and Bellows, Richard J., 4,379,814, Cl. 429-42.000.

Bendix Corporation, The: *See*—
Wood, Richard D., 4,379,412, Cl. 73-863.240.

Beneke, Wolfgang; and Jager, Walter, to Trutzschlar GmbH & Co. KG. Method and apparatus for separating waste from a fiber-and-waste mixture. 4,379,357, Cl. 19-105.000.

Bennewitz, Matt C.: *See*—
Bennewitz, Paul F.; and Bennewitz, Matt C., 4,379,406, Cl. 73-336.500.

Bennewitz, Paul F.; and Bennewitz, Matt C. Relative humidity detector systems and method of increasing the calibration period of relative humidity detector systems. 4,379,406, Cl. 73-336.500.

Berge, Charles T.: *See*—
Mack, Mark P.; and Berge, Charles T., 4,379,766, Cl. 260-413.000.

Berry, Larry R., to Sun Studs, Inc. Veneer lathe log charger system having enhanced accuracy and rate of production. 4,379,476, Cl. 144-357.000.

Bethune, Donald S., to International Business Machines Corporation. Apparatus for four side transverse irradiation of a region. 4,380,076, Cl. 372-54.000.

Bevan, David; Yee, James S.; and Pruyn, Richard R., to Boeing Company, The. Radome for aircraft. 4,380,012, Cl. 343-705.000.

BFG Glassgroup: *See*—
Posset, Robert, 4,380,040, Cl. 361-280.000.

Bianchi, Valerio; Abidin, Anwar; and Thonnessen, Dieter, to Bosch & Pierburg System ohG. Carburettors for internal combustion engines. 4,379,770, Cl. 261-142.000.

Bickel, Wolf; Kaule, Walter; and Primbsch, Erik, to Krautkramer-Branson, Inc. Apparatus for maintaining adjustment of coincidence and relative phase relationship of light beams in an interferometer. 4,379,633, Cl. 356-359.000.

Bickel, Wolf: *See*—
Primbsch, Erik; and Bickel, Wolf, 4,379,409, Cl. 73-643.000.

Blaine, Edward H., to Merck & Co., Inc. Anti-inflammatory composition. 4,379,792, Cl. 424-270.000.

Blake, Charles E.: *See*—
Otis, Harold R.; and Blake, Charles E., 4,379,807, Cl. 428-383.000.

Blake, Charles R.: *See*—
Mullersman, Ferdinand H.; and Blake, Charles R., 4,379,816, Cl. 429-91.000.

Blank, Werner J.: *See*—
Parekh, Girish G.; Blank, Werner J.; and Schirmann, Peter J., 4,379,911, Cl. 528-245.000.

Blatter, Johann; and Schaad, Walter, to Sprecher & Schuh AG. Gas-blast switch. 4,379,958, Cl. 200-148.00A.

Block, Siegmar, to Thyssen Industrie AG. Control device for an advancing support in underground mining. 4,379,662, Cl. 405-302.000.

Bloom, Arnold L.: *See*—
Fischer, Dennis G.; and Bloom, Arnold L., 4,379,622, Cl. 350-394.000.

Bloomfield Manufacturing Co., Inc.: *See*—
McIntosh, Thomas K., 4,379,546, Cl. 254-111.000.

Blough, LeVone A.; and Gregory, David L. Sliding closure security system. 4,379,576, Cl. 292-205.000.

Bode, Elwood J., to BTI Computer Systems. Data recording format and method and apparatus for producing same. 4,380,029, Cl. 360-48.000.

Boden, Richard M., to International Flavors & Fragrances Inc. Aliphatic branched olefin dioxolanes, dithiolanes, and oxathiolanes and uses thereof in augmenting or enhancing the aroma and/or taste of consumable materials. 4,379,754, Cl. 252-174.110.

Boebel, Manfred: *See*—
Bauer, Siegfried; and Boebel, Manfred, 4,379,458, Cl. 604-264.000.

Boeing Company, The: *See*—
Bevan, David; Yee, James S.; and Pruyn, Richard R., 4,380,012, Cl. 343-705.000.
King, Charles H., 4,380,039, Cl. 361-218.000.

Bohle, Lorenz. High efficiency sorting apparatus. 4,379,509, Cl. 209-598.000.

Bohman, Nils-Erik, to Forsheda Gummifabrik AB. Pipe sealing device. 4,379,559, Cl. 277-207.00A.

Boie, Immo: *See*—
Krafft, Werner; Helling, Gunter; Matschke, Guunther; and Boie, Immo, 4,379,829, Cl. 430-215.000.

Boleda Vila, Antonio: *See*—
Calzada Badia, Jose-Maria; Boleda Vila, Antonio; Sabater Sanmartin, Jose; and Villazon Meneses, Maria J., 4,379,793, Cl. 424-274.000.

Bolich, Raymond E., Jr., to Procter & Gamble Company, The. Hair care compositions. 4,379,753, Cl. 252-106.000.

Borden, Peter G.; Bell, Ronald L.; and Hyder, Syed B., to Varian Associates, Inc. Grooved solar cell for deployment at set angle. 4,379,944, Cl. 136-259.000.

Borisov, Vladimir S.; and Korovin, Vyacheslav V. Linear interpolator. 4,380,006, Cl. 340-347.0CC.

Borkan, William N.; Savino, Frank M.; and Waltz, Joseph M., to Neuromed, Inc. Multi-electrode catheter assembly for spinal cord stimulation. 4,379,462, Cl. 128-786.000.

Boruschweitz, Manfred: *See*—
Hamisch, Hans J.; Boruschweitz, Manfred; and Gast, Theodor, 4,379,404, Cl. 73-35.000.

Bosch & Pierburg System ohG: *See*—
Bianchi, Valerio; Abidin, Anwar; and Thonnessen, Dieter, 4,379,770, Cl. 261-142.000.

Boshoven, Billy, to Estel Hoogovens BV. Exhaust system especially for use in the cast house of a blast furnace. 4,379,548, Cl. 266-158.000.

Bottum, Edward W. Ice-making evaporator. 4,379,390, Cl. 62-354.000.

Boulos, Maher I., to Universite de Sherbrooke. Purification of metallurgical grade silicon. 4,379,777, Cl. 423-348.000.

Bowden, Wade R., Jr., to Slater Electric Inc. Shuttered receptacle. 4,379,607, Cl. 339-40.000.

Bowers, Donald P.: *See*—
Brammer, Michael A.; and Bowers, Donald P., 4,379,413, Cl. 74-710.500.

Boyd, George M. Astrology chart apparatus. 4,379,698, Cl. 434-106.000.

BP Chemicals Limited: *See*—
Marsh, Christopher R., 4,379,899, Cl. 526-144.000.

Brailey, Allen C.: *See*—
Beardsley, Brent C.; and Brailey, Allen C., 4,380,067, Cl. 371-11.000.

Brain Dust Patents Establishment: *See*—
Kuchler, Fritz, 4,379,416, Cl. 83-23.000.

Brammer, Michael A.; and Bowers, Donald P., to Dana Corporation. Angle drive unit. 4,379,413, Cl. 74-710.500.

Brandstetr, Jiri; Huleja, Josef; and Kupec, Josef, to Vysoke udeni technicke. Apparatus for thermochemical quantitative analysis. 4,379,775, Cl. 422-51.000.

Brandt, Lothar; and Holst, Arno, to Hoechst Aktiengesellschaft. Process for preparing water-soluble phosphonomethyl ethers of cellulose. 4,379,918, Cl. 536-62.000.

BRD Company Limited: *See*—
Fisher, Leslie G., 4,379,707, Cl. 464-162.000.

Brebels, Jack J.: *See*—
Andersen, Heinz-Erhardt; Brebels, Jack J.; Matschke, Klaus; and Scheier, Franz, 4,379,774, Cl. 264-284.000.

Breckenridge, Roger A.: *See*—
Fripp, Archibald L.; Robertson, James B.; and Breckenridge, Roger A., 4,379,970, Cl. 250-338.000.

Bridgeman, David R.: *See*—
Grasselli, Robert K.; Suresh, Dev D.; and Bridgeman, David R., 4,379,925, Cl. 544-102.000.

British Petroleum Company Limited, The: *See*—
Wilson, Douglas, 4,379,873, Cl. 524-7.000.

Britz, Arne J. Fire hydrant cap with recessed valve. 4,379,469, Cl. 137-296.000.

Brochier & Fils: *See*—
Palmer, Raymond J.; and Michesux, Dominique, 4,379,798, Cl. 428-113.000.

Brost, Robert L.; and Gagle, Duane W., to Phillips Petroleum Company. Process and apparatus for laying a subterranean film. 4,379,655, Cl. 405-176.000.

Brown, David; Giles, Anthony F.; Cramer, Howard W.; Noble, H. Mary; Nisbet, Louis J.; Bushell, Michael E.; Weare, Glenis; and Caldwell, Ian Y., to Glaxo Group Limited. Cephalosporins. 4,379,920, Cl. 542-427.000.

Brown, Robert L., to White Consolidated Industries, Inc. Asphalt paver with telescoping screed. 4,379,653, Cl. 404-118.000.

Brownscombe, Thomas F., to Shell Oil Company. Rapid curing epoxy-unsaturated monomer compositions. 4,379,908, Cl. 528-91.000.

Brunner, Josef: *See*—
Rock, Erich; and Brunner, Josef, 4,379,604, Cl. 312-330.00R.

Bruynes, Cornelis A.; and Jurriens, Theodorus K., to Gist-Brocades N.V. Preparation of 7-acylamino-3-(thio-substituted)-methyl 3-cephem-4-carboxylic acid-1-oxide derivatives. 4,379,923, Cl. 544-26.000.

Brydolf, Robert: *See*—
Johnson, John R.; and Brydolf, Robert, 4,379,603, Cl. 312-320.000.

BTI Computer Systems: *See*—
Bode, Elwood J., 4,380,029, Cl. 360-48.000.

Bubnick, Gerald F., to Union Carbide Corporation. Cell having mixed solid cathode materials for controlling cell expansion on discharge. 4,379,815, Cl. 429-66.000.

Buchmann, Heinz; Mayer, Bruno; and Szybowicz, Wolfgang, to Thyssen Industrie AG. Closed one-piece roller frame for vibrator rollers. 4,379,652, Cl. 404-117.000.

Burke Company, The: *See*—
Frankenfield, David J., 4,379,650, Cl. 403-316.000.

Burlington Industries, Inc.: *See*—
Harris, William D., 4,380,037, Cl. 361-214.000.

Burroughs Corporation: *See*—
Bacrania, Kantilal, 4,380,033, Cl. 360-77.000.
Ely, Richard I.; and Nelson, Edward I., 4,379,968, Cl. 250-229.000.
Schmulian, David E., 4,379,428, Cl. 101-93.090.
Shima, George T., 4,380,052, Cl. 364-900.000.
Spencer, David H.; Steiner, Marvin E.; and Lang, Donald H., 4,380,066, Cl. 371-10.000.

Bushell, Michael E.: *See*—
Brown, David; Giles, Anthony F.; Cramer, Howard W.; Noble, H. Mary; Nisbet, Louis J.; Bushell, Michael E.; Weare, Glenis; and Caldwell, Ian Y., 4,379,920, Cl. 542-427.000.

Butler, David V.: *See*—
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C. Conradty Nurnberg GmbH & Co. KG: *See*—
Zollner geb. Moller, Christine, 4,379,723, Cl. 134-2.000.

C. H. Boehringer Sohn: *See*—
Gorka, Gunther; and Stinshoff, Klaus, 4,379,840, Cl. 435-10.000.

C. Hoegger & Cie, A.G.: *See*—
Geissbuhler, Hans, 4,379,356, Cl. 17-45.000.

C & K Components, Inc.: *See*—
Turner, W. Bard; and Shek, Thompson, 4,379,973, Cl. 307-112.000.

C. R. Bard, Inc.: *See*—
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Caldwell, Edward W.; and Smethers, Rollo G., Jr., to Lockheed Corporation. Transport airplane. 4,379,533, Cl. 244-118.100.

Caldwell, Ian Y.: *See*—
Brown, David; Giles, Anthony F.; Cramer, Howard W.; Noble, H. Mary; Nisbet, Louis J.; Bushell, Michael E.; Weare, Glenis; and Caldwell, Ian Y., 4,379,920, Cl. 542-427.000.

California Fin Systems: *See*—
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Calvino, Ben J., to Westinghouse Electric Corp. Modular "Y"-type enclosure elements for gas insulated substations. 4,379,957, Cl. 200-145.000.

Calzada Badia, Jose-Maria; Boleda Vila, Antonio; Sabater Sanmartin, Jose; and Villazon Meneses, Maria J., to Calzada y Cia, S.R.C. Process for synthesis of esters of N-(4'-hydroxyphenyl)acetamide with derivatives of 5-benzoil-1-methyl pyrrole-2-acetic acids. 4,379,793, Cl. 424-274.000.

Calzada y Cia, S.R.C.: *See*—
Calzada Badia, Jose-Maria; Boleda Vila, Antonio; Sabater Sanmartin, Jose; and Villazon Meneses, Maria J., 4,379,793, Cl. 424-274.000.

Camp International, Inc.: *See*—
Meier, Robert H.; and Farr, Evelyn, 4,379,463, Cl. 128-80.00C.

Campbell, Patricia S.; and Chandrasekaran, Santosh K., to ALZA Corporation. Dosage for coadministering drug and percutaneous absorption enhancer. 4,379,454, Cl. 604-897.000.

Canavello, Benjamin J.; and Hatzakis, Michael, to International Business Machines Corporation. Self-aligned photoresist process. 4,379,833, Cl. 430-325.000.

Canon Kabushiki Kaisha: *See*—
Kitamura, Takashi, 4,379,631, Cl. 355-14.00R.
Matsuoka, Kazuhiko; and Minoura, Kazuo, 4,379,612, Cl. 350-6.800.
Mitushashi, Yasuo, 4,379,825, Cl. 430-111.000.
Takahashi, Hiroshi, 4,380,053, Cl. 364-900.000.

Canyon Corporation: *See*—
Tada, Tetsuya; and Morishita, Yutaka, 4,379,685, Cl. 425-183.000.

Capetola, Robert J.; and McGuire, John L., to Ortho Pharmaceutical Corporation. Analgesic composition. 4,379,789, Cl. 424-260.000.

Capolupo, David F.; and Donnelly, James J., to Timex Corporation. Timepiece case/dial plate assembly. 4,379,644, Cl. 368-314.000.

Carl Still GmbH & Co. KG, Firma: *See*—
Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, 4,379,692, Cl. 432-18.000.
Carle & Montanari S.p.A.: *See*—
Salicini, Sandro, 4,379,504, Cl. 198-455.000.
Carlock, Gaylord W.; Garner, Jimmy G.; Gatlin, Charles M.; Guinn, Kenneth F.; and Reyes, Peter A., to Textron, Inc. Individual blade control. 4,379,678, Cl. 416-98.000.
Carmel, Yuval; and Eylon, Shmuel, to State of Israel, Rafael Armament Development Authority, Ministry of Defense. Space-discharge electronic device particularly useful as a flash X-ray tube. 4,379,977, Cl. 378-136.000.
Carney, James E., Jr.: *See*—
Albo, Ronald T.; Carney, James E., Jr.; and Riehl, Robert E., 4,379,527, Cl. 242-4.0BE.
Carpenter, J. Ronald: *See*—
Danzik, Mitchell; and Carpenter, J. Ronald, 4,379,773, Cl. 264-184.000.
Carruth, H. T., Jr., to Chevron Research Company. Method and apparatus associated with a microcomputer system for indicating next-in-time parameters, and for controllably generating a positional code for a rollalong switch associated with a seismic source-detector array of an exploration system. 4,380,054, Cl. 364-900.000.
Carswell, Angela M.: *See*—
Robinson, Joseph G.; Barnes, David I.; and Carswell, Angela M., 4,379,896, Cl. 525-472.000.
Cashion, Peter. Immobilization of polynucleotides and polypeptides with tritylated polysaccharides. 4,379,843, Cl. 435-178.000.
Caterpillar Tractor Co.: *See*—
Albo, Ronald T.; Carney, James E., Jr.; and Riehl, Robert E., 4,379,527, Cl. 242-4.0BE.
Liesener, Kenneth P., 4,379,389, Cl. 60-428.000.
Meisel, Thomas C., Jr.; and Price, Robert J., 4,379,674, Cl. 414-699.000.
Muntjanoff, John R.; and Day, Dennis M., 4,379,675, Cl. 414-734.000.
Roussin, Michael A.; Jones, Steven D.; and Woody, Albert L., 4,379,595, Cl. 299-37.000.
Censor Patent- und Versuchs-Anstalt: *See*—
Lobach, Ernst, 4,379,831, Cl. 430-311.000.
Centis, Sergio, to Arioli & C.S.r.l. Apparatus for steaming printed fabrics. 4,379,392, Cl. 68-5.00C.
Ceskoslovenska akademie ved: *See*—
Juracka, Frantisek; and Hudecek, Slavko, 4,379,868, Cl. 523-201.000.
Chabin Corporation: *See*—
Webster, John L.; and Venaleck, John T., 4,379,361, Cl. 29-857.000.
Chambers, Robert W.; McNeely, Michael L.; and Torrington, Leslie A., to RCA Corporation. Apparatus for molding a recorded disc. 4,379,686, Cl. 425-290.000.
Chan, May L.: *See*—
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Chandrasekaran, Santosh K.: *See*—
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Chandrasekhar, Ram: *See*—
Hannoosh, James G.; Harvey, Andrew C.; Harding, John C.; and Chandrasekhar, Ram, 4,379,670, Cl. 414-217.000.
Chang, Laurence W.: *See*—
Alexanian, Vazken A.; Forgione, Peter S.; and Chang, Laurence W., 4,379,767, Cl. 260-453.00P.
Chang, Yu-Wen: *See*—
Yuan, Lloyd T.; Chang, Yu-Wen; and Mills, Thomas G., 4,380,020, Cl. 357-3.000.
Chaparral Communications, Inc.: *See*—
Howard, H. Taylor, 4,380,014, Cl. 343-786.000.
Charles Stark Draper Laboratory, Inc., The: *See*—
Whitney, Daniel E., 4,379,363, Cl. 33-169.00C.
Charpentier, Robert: *See*—
Mimoun, Hubert; Charpentier, Robert; and Roussel, Michel, 4,379,942, Cl. 568-385.000.
Chattha, Mohinder S., to Ford Motor Company. High solids urethane coatings prepared from a polylisocyanate and a polyhydroxy oligmer. 4,379,906, Cl. 528-75.000.
Chemische Werke Huels, Aktiengesellschaft: *See*—
Konietzny, Alfred; and Bartz, Wilfried, 4,379,890, Cl. 525-332.800.
Chemtob, Elie: *See*—
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Chen, Yeunung; and McLaughlin, Michael J., to Motorola, Inc. Method of and means for variable-rate coding of LPC parameters. 4,379,949, Cl. 179-15.55R.
Chern Developments (Proprietary) Limited: *See*—
Basterfield, Ernest P.; and Basterfield, Llewellyn P., 4,379,513, Cl. 220-325.000.
Chevron Research Company: *See*—
Carruth, H. T., Jr., 4,380,054, Cl. 364-900.000.
Danzik, Mitchell; and Carpenter, J. Ronald, 4,379,773, Cl. 264-184.000.
Rosenthal, Joel W.; and Dahlberg, Arthur J., 4,379,744, Cl. 208-10.000.
Chicopee: *See*—
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Childress, Hugh L., Jr.: *See*—
Baxter, Donald J.; and Childress, Hugh L., Jr., 4,379,986, Cl. 318-434.000.
Chiyoda, Hironobu; Yamazaki, Hisayuki; and Takabe, Reiichiro, to Hitachi Powdered Metals Company, Ltd. Method of producing picture tube coating compositions. 4,379,762, Cl. 252-507.000.
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Kaltz, Milton C.; Chojnowski, Edward M.; Garascia, David C.; Bauer, Barney J.; and George, Richard D., 4,379,586, Cl. 296-222.000.
Chorosevic, Jerome J.: *See*—
Green, Bernard J.; and Chorosevic, Jerome J., 4,379,596, Cl. 301-5.00B.
Ciba-Geigy AG: *See*—
Lenoir, John; Jan, Gerald; and Fryberg, Mario, 4,379,819, Cl. 430-17.000.
Ciba-Geigy Corporation: *See*—
Fah, Hansjakob; and Grieder, Alfred, 4,379,938, Cl. 546-345.000.
Clark, Richard P.; Frantz, Robert H.; Hawk, Gary W.; and Root, John A., to AMP Incorporated. Cartridge holder and connector system. 4,379,606, Cl. 339-17.0CF.
Clarke, Robert L. G., to Sterling Drug Inc. Nortropane derivatives. 4,379,936, Cl. 546-91.000.
Cleaveland, Charles M.; and Kowalik, Peter M., to Cleaveland/Price Enterprises, Inc. Break-jaw construction for a disconnecting switch structure. 4,379,956, Cl. 200-48.00A.
Cleaveland/Price Enterprises, Inc.: *See*—
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Clemens, Lawrence M.; and Gasper, Alton J., to Minnesota Mining and Manufacturing Company. Waste water treatment by chelation-gelation. 4,379,763, Cl. 252-628.000.
Clement, Joseph J., to Mead Corporation, The. Shelving assembly. 4,379,431, Cl. 108-111.000.
Clikeman, Richard R.; Jones, Donald H.; Shortridge, Thomas J.; and Troy, Edward J., to Rohm and Haas Company. Methyl methacrylate-butadiene-styrene impact modifier polymers, polyvinyl chloride, compositions and methods. 4,379,876, Cl. 524-109.000.
Coal Industry (Patents) Limited: *See*—
Robinson, Joseph G.; Barnes, David I.; and Carswell, Angela M., 4,379,896, Cl. 525-472.000.
Coats, Montgomery R.; and Janssen, Gwen V. Emergency sound detector device. 4,380,004, Cl. 340-34.000.
Cobb, Harold W.; and Fotland, Richard A., to Dennison Manufacturing Company. Corona charging apparatus. 4,379,969, Cl. 250-324.000.
Coburn, John F., to Exxon Research and Engineering Co. Solar energy collector. 4,379,613, Cl. 350-96.100.
Cochran, Donald D., to National Can Corporation. Synchronized bottle unloading system. 4,379,671, Cl. 414-331.000.
Cocks, Michael H.; and Evans, Gary A., to Hobart Corporation. Weighing scale with low susceptibility to vibration. 4,379,495, Cl. 177-1.000.
Coherent, Inc.: *See*—
Fischer, Dennis G.; and Bloom, Arnold L., 4,379,622, Cl. 350-394.000.
Cohn, David E.; and Conley, Eugene E. Gas laser preionization device. 4,380,079, Cl. 372-87.000.
Colavito, Kathleen M.: *See*—
Corso, Anthony J.; Colavito, Kathleen M.; and Phillips, Thomas S., 4,379,937, Cl. 546-155.000.
Cole, Bernard M. Automatically expanding pop-up decoration. 4,379,797, Cl. 428-9.000.
Cole, John N.; and Hettel, David A., to Mead Corporation, The. Sheet type forming board and formed board products. 4,379,808, Cl. 428-438.000.
Coleman, Charles: *See*—
Smith, Peter R.; and Coleman, Charles, 4,379,971, Cl. 250-342.000.
Coleman Company, Inc., The: *See*—
Farley, Scott R., 4,379,483, Cl. 165-2.000.
Collins, Stanley B., to Minnesota Mining and Manufacturing Company. Developer compositions having layer of a pigment on the surface thereof. 4,379,824, Cl. 430-106.600.
Color Communications, Inc.: *See*—
Lerner, Stanley, 4,379,696, Cl. 434-98.000.
Columbia University in the City of New York, The Trustees of: *See*—
Spiegelman, Sol, 4,379,839, Cl. 435-5.000.
Comerford, John, to Oak Industries, Inc. Sealed rotary switch. 4,379,955, Cl. 200-11.0DA.
Commissariat a l'Energie Atomique: *See*—
Aubert, Gilles, 4,380,084, Cl. 376-204.000.
Compagnie Generale d'Automatisme CGA Alcatel: *See*—
Nael, Albert, 4,379,627, Cl. 353-27.00A.
Conley, Eugene E.: *See*—
Cohn, David E.; and Conley, Eugene E., 4,380,079, Cl. 372-87.000.
Conoco Inc.: *See*—
Mack, Mark P.; and Berge, Charles T., 4,379,766, Cl. 260-413.000.
Widiner, Karl J.; and Goldsmith, Riley G., 4,379,657, Cl. 405-195.000.
Conrad, Robert A.; and White, William A., to Eli Lilly and Company. 4(1H)-Oxocinnoline-3-carboxylic acid derivatives. 4,379,929, Cl. 544-234.000.
Conradty GmbH Co. Metallelektroden KG: *See*—
Rathjen, Hans-Carl; and Koziol, Konrad, 4,379,742, Cl. 204-286.000.
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Cook Paint and Varnish Company: *See*—
Hansen, Douglas E.; Johnson, Steven D.; and Motko, Richard L., 4,379,857, Cl. 521-54.000.

Cooper, Billy H., to Abbott Laboratories. Assimilation test for identifying yeasts. 4,379,841, Cl. 435-34.000.
Coppola, Vincent G., to Pitney Bowes Inc. Bipolar driver with illegal code detector. 4,379,985, Cl. 318-293.000.
Coq, Francois. Process for producing a filtering structure in particular for cigarette filters. 4,379,465, Cl. 131-332.000.
Corbacho, Carlos J., to Joyal Products, Inc. Indexing apparatus. 4,379,562, Cl. 279-5.000.
Cordier, Walter: *See—*
Pieper, Paul; and Cordier, Walter, 4,379,417, Cl. 83-27.000.
Coren, Gerald. Clip-on protector. 4,380,036, Cl. 361-119.000.
Cornell, William D.; and Evans, Carnot, to Sherwood Medical Company. Lancet injector. 4,379,456, Cl. 128-314.000.
Corning Glass Works: *See—*
Danielson, Paul S.; Mattison, Ronald P.; and Werner, Albert J., 4,379,851, Cl. 501-66.000.
Lock, William E.; and Snyder, Edward A., 4,379,818, Cl. 430-5.000.
Corso, Anthony J.; Colavito, Kathleen M.; and Phillips, Thomas S., to American Hoechst Corporation. Selective acylation of hydroxy-amino-arylsulfonic acids. 4,379,937, Cl. 546-155.000.
Corvus Systems, Inc.: *See—*
Eisenhard, Bruce T.; and Hahn, Mark C., 4,380,047, Cl. 364-200.000.
Cosden Technology, Inc.: *See—*
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Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., to Merck & Co., Inc. 4-(Substituted thiazolyl)-3-hydroxy-3-pyrroline-2,5-dione inhibitors of glycolic acid oxidase. 4,379,791, Cl. 424-270.000.
Cramer, Howard W.: *See—*
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Titcomb, Steven E., 4,379,566, Cl. 280-251.000.
Cross, Sydney H., to Tarmac Industrial Holdings Limited. Method and apparatus for the production of composite sheet material and a sheet material produced thereby. 4,379,729, Cl. 156-73.600.
Crounse, Nathan N., to Sterling Drug Inc. Novel compositions and processes. 4,379,710, Cl. 8-527.000.
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Di Tria, Paolo, 4,380,081, Cl. 375-82.000.
Cunningham, Joel, to Baxter Travenol Laboratories, Inc. Maintaining the dimensional integrity of thermoplastic tubing ends for receiving a luer. 4,379,472, Cl. 138-89.000.
Czajkowski, Albert J.: *See—*
Schafer, David E.; and Czajkowski, Albert J., 4,379,716, Cl. 71-87.000.
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Daicel Chemical Industries, Ltd.: *See—*
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Daikin Kogyo Co., Ltd.: *See—*
Amimoto, Yoshio; and Tatemoto, Masayoshi, 4,379,901, Cl. 526-247.000.
Daitoku, Koichi, to Nippon Kogaku K.K. Apparatus for controlling film advancement in a camera. 4,379,629, Cl. 354-173.000.
Dalal, Hormazdyar M.; and Lowney, John J., to International Business Machines Corporation. Method for making low barrier Schottky devices of the electron beam evaporation of reactive metals. 4,379,832, Cl. 430-315.000.
d'Alayer de Costemore d'Arc, Stephane M. A., to Staar S.A. Control for bidirectional drive responsive to gaps in recorded sound. 4,380,031, Cl. 360-74.100.
Dalton, Augustine I., Jr.; and Skinner, Ronald W., to Air Products and Chemicals, Inc. Hydrogen peroxide synthesis. 4,379,778, Cl. 423-584.000.
Dana Corporation: *See—*
Brammer, Michael A.; and Bowers, Donald P., 4,379,413, Cl. 74-710.500.
Danfoss A/S: *See—*
Nicolaisen, Holger, 4,380,000, Cl. 336-192.000.
Schmidt, Jorn M., 4,379,961, Cl. 219-78.010.
Danielson, Paul S.; Mattison, Ronald P.; and Werner, Albert J., to Corning Glass Works. Tinted borosilicate glasses. 4,379,851, Cl. 501-66.000.
Dannatt, Hugh St. L., to Pitney Bowes Inc. High ratio speed reducer. 4,379,414, Cl. 74-805.000.
Danzik, Mitchell; and Carpenter, J. Ronald, to Chevron Research Company. Process for wet spinning nylon 4. 4,379,773, Cl. 264-184.000.
Darling, Phillip H. Buoyancy control valve for scuba diving vests. 4,379,656, Cl. 405-186.000.
Datakey, Inc.: *See—*
Flies, William P., 4,379,966, Cl. 235-443.000.
David, Constant V. Buoyant apparatus propelled by a human operator. 4,379,701, Cl. 440-21.000.
Davidson, Alan C. Catheter assembly. 4,379,506, Cl. 206-364.000.
Davy-Loewy Limited: *See—*
Hope, Thomas; and Hewitt, Ewan C., 4,379,396, Cl. 72-13.000.
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Muntjanoff, John R.; and Day, Dennis M., 4,379,675, Cl. 414-734.000.
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Walther, William D., 4,379,597, Cl. 301-12.00R.
Dean, Carl J. Puzzle-game. 4,379,555, Cl. 273-236.000.
Deane, David W., to Ball Corporation. Auxiliary blanking and auxiliary simulated video line generator unit for a video inspection system. 4,380,025, Cl. 358-106.000.
Deaton, David W. Medical receptacle with disposable liner assembly. 4,379,455, Cl. 604-320.000.
Deaton, Thomas: *See—*
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Debord, Pierre; and Marijon, Jean-Louis, to International Business Machines Corp. Dynamic zero offset compensating circuit for A/D converter. 4,380,005, Cl. 340-347.0AD.
De Carlo, Alfred F.: *See—*
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de Couasnon, Tristan, to Thomson-CSF. Test unit for a high-rate multitrack digital recorder. 4,380,068, Cl. 371-24.000.
Dedden, Hubert; and Pfingst, Jurgen, to Agfa-Gevaert Aktiengesellschaft. Method and apparatus for previewing exposed photographic films or the like. 4,379,632, Cl. 355-68.000.
Deere & Company: *See—*
Elliott, Marion D.; and Reece, Wendell D., 4,379,522, Cl. 239-167.000.
Hirst, Richard W., 4,379,962, Cl. 219-121.00P.
Riewerts, Paul R.; and Hillman, Stephen M., 4,379,491, Cl. 172-328.000.
del Fabro, Mario F., to Fiora del Fabro Y Cia. Ltda. Device for drawing liquids from containers. 4,379,511, Cl. 215-1.00A.
Dennison Manufacturing Company: *See—*
Cobb, Harold W.; and Fotland, Richard A., 4,379,969, Cl. 250-324.000.
Deutsch, Albert S.; Lyons, Christopher F.; and Piller, Robert, to Polychrome Corporation. Developer for positive photolithographic articles. 4,379,830, Cl. 430-309.000.
Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Adaptive strum keying for a keyboard electronic musical instrument. 4,379,420, Cl. 84-1.030.
Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler: *See—*
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DeVries, James H., to Baxter Travenol Laboratories, Inc. Prepackaged, self-contained fluid circuit module. 4,379,452, Cl. 604-6.000.
Diamond Shamrock Corporation: *See—*
O'Malley, Mary A.; and Drake, Nancy J., 4,379,893, Cl. 525-386.000.
Solomon, Frank; and Grun, Charles, 4,379,772, Cl. 264-49.000.
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Dickerson, Richard C., to Ecolochem, Inc. Vinyl acetate purification process. 4,379,940, Cl. 560-248.000.
Diesel Kiki Co., Ltd.: *See—*
Ishizuka, Yutaka, 4,379,425, Cl. 92-71.000.
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Digital Equipment Corporation: *See—*
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Dmitrowsky, Igor. Aircraft attachable to the body of a pilot. 4,379,532, Cl. 244-4.00A.
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Stoev, Stoycho M.; Dshendova, Shtelyana D.; Stoyanov, Kiril N.; Dochev, Raycho V.; and Krestev, Tzvetan P., 4,379,714, Cl. 65-19.000.
Dr. Karl Thomae Gesellschaft mit beschrankter Haftung: *See—*
Heider, Joachim; Austel, Volkhard; Eberlein, Wolfgang; Kadatz, Rudolf; and Lillie, Christian, 4,379,788, Cl. 424-251.000.
Maier, Roland; Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Lechner, Uwe; and Goeth, Hanns, 4,379,784, Cl. 424-229.000.
Dodds, William E. Ore mill and metal separating device. 4,379,526, Cl. 241-79.100.
Doninger, Joseph E.; and Hanson, George D., to International Minerals & Chemical Corp. Olivine bedding material for soaking pits. 4,379,691, Cl. 432-3.000.
Donnelly, James J.: *See—*
Capolupo, David F.; and Donnelly, James J., 4,379,644, Cl. 368-314.000.
Douke, Harumi: *See—*
Iwata, Masayosi; Douke, Harumi; Hayashi, Yoshikazu; Yokoyama, Tadashi; and Mizuta, Yukio, 4,379,954, Cl. 200-4.000.

Dounce, George H.; and Moore, John A., to Bausch & Lomb Incorporated. Contact lens disinfecting apparatus. 4,379,965, Cl. 219-521.000.
Dow Chemical Company, The: *See—*
Pews, Richard G., 4,379,930, Cl. 544-298.000.
Shipley, Randall S.; Lowery, Kirby, Jr.; and Gibbs, Ronald L., 4,379,760, Cl. 252-429.00B.
Dow Corning Corporation: *See—*
Plueddemann, Edwin P., 4,379,931, Cl. 546-14.000.
Down, Peter E.; and Tomlinson, Walter J., Jr., to Ecodyne Corporation. Method of ion exchange regeneration. 4,379,855, Cl. 521-26.000.
Downing, Gerald T.; and Savagian, Michael D., to W. H. Brady Co. Graphics-bearing element and fluid line marking tape. 4,379,805, Cl. 428-346.000.
Drake, Nancy J.: *See—*
O'Malley, Mary A.; and Drake, Nancy J., 4,379,893, Cl. 525-386.000.
Dresser Industries, Inc.: *See—*
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Dshendova, Shtelyana D.: *See—*
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Duncan, Leo D. Seat structure. 4,379,587, Cl. 297-192.000.
Dungs, Horst: *See—*
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Du Pont de Nemours, E. I., and Company: *See—*
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Levitt, George, 4,379,769, Cl. 260-545.00R.
McLaughlin, Joseph E.; and Strickland, George A., 4,379,886, Cl. 525-162.000.
Duvall, William S.: *See—*
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Dyer, Keith: *See—*
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Eastman Kodak Company: *See—*
Lu, Chen-i, 4,379,912, Cl. 528-274.000.
Mir, Jose M.; Varner, Jerry R.; and Kurtz, Clark N., 4,380,023, Cl. 358-75.000.
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Weaver, James C.; and Seymour, Robert W., 4,379,802, Cl. 428-220.000.
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Ecodyne Corporation: *See—*
Down, Peter E.; and Tomlinson, Walter J., Jr., 4,379,855, Cl. 521-26.000.
Ecolochem, Inc.: *See—*
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Economy, James; Gritter, Roy J.; and Hiraoka, Hiroyuki, to International Business Machines Corporation. Positive electron beam resists of ortho chloro substituted phenol or cresol condensed with formaldehyde. 4,379,826, Cl. 430-141.000.
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Eggenstein, Friedrich: *See—*
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Ehrlich, Benjamin S.; and Oertel, Richard W., III, to Upjohn Company, The. Novel polyurethane product. 4,379,904, Cl. 528-65.000.
Eisele, John F.; and Mercer, Elizabeth A., to Minnesota Mining and Manufacturing Company. Liquid sorbent materials. 4,379,804, Cl. 428-332.000.
Eisenberg, Arnold J., to Owens-Corning Fiberglas Corporation. Method and apparatus for forming glass fibers. 4,379,713, Cl. 65-1.000.
Eisenberg, Steven K.; and Hancock, Mark W., to Whittaker Corporation. Hydroponic growing system and method. 4,379,375, Cl. 47-65.000.
Eisenhard, Bruce T.; and Hahn, Mark C., to Corvus Systems, Inc. Interface apparatus employing a video tape drive to back-up a disc drive and including error detecting and correcting circuitry. 4,380,047, Cl. 364-200.000.
Elevator GmbH: *See—*
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Conrad, Robert A.; and White, William A., 4,379,929, Cl. 544-234.000.
Hall, David A., 4,379,739, Cl. 204-72.000.
Hull, Robert N.; and Gordee, Robert S., 4,379,781, Cl. 424-114.000.
Kirst, Herbert A., 4,379,917, Cl. 536-16.800.
Lunn, William H. W.; and Wheeler, William J., 4,379,787, Cl. 424-246.000.
Elliott, Marion D.; and Reece, Wendell D., to Deere & Company. Folding spray boom assembly. 4,379,522, Cl. 239-167.000.
Elliott Turbomachinery Company, Inc.: *See—*
Angelo, Eugene V.; and Pratap, Prem, 4,379,544, Cl. 251-74.000.
Elter, Claus: *See—*
Schoening, Josef; Schwiers, Hans-Georg; Elter, Claus; Stracke, Wilfried; and Mauersberger, Reinhard, 4,380,085, Cl. 376-381.000.
Ely, Richard I.; and Nelson, Edward I., to Burroughs Corp. Photo-optical keyboard having light attenuating means. 4,379,968, Cl. 250-229.000.
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Nakamura, Hitoshi; Nishizima, Hideyo; Ema, Hideaki; Harigaya, Makoto; and Otomura, Satoshi, 4,379,820, Cl. 430-58.000.
Endres, Lothar: *See—*
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Energy Conversion Devices, Inc.: *See—*
Hallman, Robert W., 4,379,827, Cl. 430-166.000.
Yang, Chi C.; Madan, Arun; Ovshinsky, Stanford R.; and Adler, David, 4,379,943, Cl. 136-249.000.
Engeler, Paul; Sonderegger, Hans C.; and Wolfer, Peter, to Kistler Instrumente AG. Force transducer, particularly for ballistic pressure measuring. 4,379,405, Cl. 73-167.000.
Erickson, Kent E., to Keuffel & Esser Company. Light modulator employing electrooptic crystals. 4,379,620, Cl. 350-387.000.
Erie Technological Products, Inc.: *See—*
Soong, Jakob C. K., 4,379,854, Cl. 501-138.000.
ESAB Aktiebolag: *See—*
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Esmil International B.V.: *See—*
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Evans, Donald E.: *See—*
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Evans, Gary A.: *See—*
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Ex-Cell-O Corporation: *See—*
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Coburn, John F., 4,379,613, Cl. 350-96.100.
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Polizzotti, Richard S.; and Krutenat, Richard C., 4,379,745, Cl. 208-132.000.
Tsien, Hsue C.; Newby, Kenneth R.; Grimes, Patrick G.; and Bellows, Richard J., 4,379,814, Cl. 429-42.000.
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FA. Maschinenfabrik Buckau R. Wolf AG: *See—*
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FAG Kugelfischer Georg Schafer & Co.: *See—*
Muller, Armin, 4,379,600, Cl. 308-187.100.
Fah, Hansjakob; and Grieder, Alfred, to Ciba-Geigy Corporation. Process for producing 2,3,5-trichloropyridine. 4,379,938, Cl. 546-345.000.
Fairchild, Wayne K. Bonding applicator for producing flexible tubing. 4,379,732, Cl. 156-428.000.
Falkenburg, Hans R.; Krause, Siegfried; and McGuiness, Robert C., to Hermann Wiederhold GmbH Corp.; and Imperial Chemical Industries PLC. Coating compositions. 4,379,909, Cl. 528-94.000.
Farley, Scott R., to Coleman Company, Inc., The. Method of controlling heating and cooling sources. 4,379,483, Cl. 165-2.000.
Farr, Evelyn: *See—*
Meier, Robert H.; and Farr, Evelyn, 4,379,463, Cl. 128-80.00C.
Fern Engineering: *See—*
Bakken, Gordon J., 4,379,560, Cl. 277-236.000.
Fette, Bruce A., to Motorola, Inc. High speed digital divider having normalizing circuitry. 4,380,051, Cl. 364-766.000.
Fickel, Walter; and Ries, Gerhard, to Akzo NV. Porous, powdery polypropylene. 4,379,860, Cl. 521-61.000.
Field, George F.; Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, to Hoffmann-La Roche Inc. Pyrazolobenzazepines. 4,379,765, Cl. 260-245.600.
Fiora del Fabro Y Cia. Lida.: *See—*
del Fabro, Mario F., 4,379,511, Cl. 215-1.00A.
Fischer, Dennis G.; and Bloom, Arnold L., to Coherent, Inc. Broad band phase shift system. 4,379,622, Cl. 350-394.000.
Fischer, Rolf: *See—*
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Fish, Ivan L. Artist's freehand sketching device. 4,379,364, Cl. 33-277.000.
Fisher, Leslie G., to BRD Company Limited. Splined joints. 4,379,707, Cl. 464-162.000.
Fisher, Warren H., Jr.; and Barnet, Barry M., to Foster Wheeler Energy Corporation. Wet/dry steam condenser. 4,379,485, Cl. 165-110.000.
Fleming, James W., Jr.; and Shiever, John W., to Bell Telephone Laboratories, Incorporated. Aluminum metaphosphate optical fibers. 4,379,616, Cl. 350-96.340.
Fletcher, Christopher L.: *See—*
Parrish, William J.; and Fletcher, Christopher L., 4,380,056, Cl. 365-183.000.

Flies, William P., to Datakey, Inc. Receptacle for electronic information key. 4,379,966, Cl. 235-443.000.
Flowers, Ralph G., to General Electric Company. Method for coprecipitating wire coating enamel composition. 4,379,916, Cl. 528-494.000.
FMN Schuster GmbH & Co. KG: *See*—
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Fodor, Lawrence M.: *See*—
Selman, Charles M.; and Fodor, Lawrence M., 4,379,898, Cl. 526-124.000.
Foege, Ronald E.; and Kerek, Leslie L., to Hughes Aircraft Company. Connector with low force socket contact having an integral hood. 4,379,611, Cl. 339-217.00S.
Fonderie & Ateliers des Sablons: *See*—
Godat, Jean; and Paget, Jean, 4,379,496, Cl. 177-25.000.
Ford Motor Company: *See*—
Chattha, Mohinder S., 4,379,906, Cl. 528-75.000.
Simko, Aladar O., 4,379,442, Cl. 123-458.000.
Forgione, Peter S.: *See*—
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Forsheda Gummifabrik AB: *See*—
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Foster-Miller Associates, Inc.: *See*—
Hannoosh, James G.; Harvey, Andrew C.; Harding, John C.; and Chandrasekhar, Ram, 4,379,670, Cl. 414-217.000.
Foster Wheeler Energy Corporation: *See*—
Fisher, Warren H., Jr.; and Barnet, Barry M., 4,379,485, Cl. 165-110.000.
Fotieva, Ljudmila I.: *See*—
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Fotland, Richard A.: *See*—
Cobb, Harold W.; and Fotland, Richard A., 4,379,969, Cl. 250-324.000.
Frankel, Milton B.; Witucki, Edward F.; and Woolery, Dean O., II, to Rockwell International Corporation. Aqueous process for the quantitative conversion of polyepichlorohydrin to glycidyl azide polymer. 4,379,894, Cl. 525-403.000.
Frankenfield, David J., to Burke Company, The. Anchoring means for wall braces. 4,379,650, Cl. 403-316.000.
Frantz, Robert H.: *See*—
Clark, Richard P.; Frantz, Robert H.; Hawk, Gary W.; and Root, John A., 4,379,606, Cl. 339-17.0CF.
Franzen, Paul, to FA. Maschinenfabrik Buckau R. Wolf AG. Multistage evaporator. 4,379,734, Cl. 159-17.00R.
Freedom Industries, Inc.: *See*—
Schott, Roger A.; and Schott, Lawrence A., 4,379,393, Cl. 70-234.000.
Freitag, Hans-Albrecht: *See*—
Haas, Peter; and Freitag, Hans-Albrecht, 4,379,861, Cl. 521-115.000.
French, Gordon B.; Mills, Eugene A.; and Miall, David E., to Occidental Oil Shale, Inc. Ventilation air and process air distribution for in situ oil shale retorts. 4,379,590, Cl. 299-2.000.
French, John A. W., to WIPAC Group Sales Limited. Adjustable support devices for swivel chairs. 4,379,540, Cl. 248-406.000.
Frerking, Harlan W., Jr.; and Kelley, Mellis M., to Goodyear Tire & Rubber Company, The. Acid-capped polyester resins. 4,379,895, Cl. 525-437.000.
Frias, Robert, to Ingram Corporation. Pipe handling system. 4,379,676, Cl. 414-748.000.
Fripp, Archibald L.; Robertson, James B.; and Breckenridge, Roger A., to United States of America, National Aeronautics and Space Administration. Pyroelectric detector arrays. 4,379,970, Cl. 250-338.000.
Fritts, David H.; and Leonard, John F., to United States of America, Air Force. Battery electrode fatigue simulator. 4,379,410, Cl. 73-809.000.
Fruitstone, Mitchell J.; Tilly, Michele M.; and Pixton, Betty G., to American Hospital Supply Corporation. Suspending medium for immunologic reactions. 4,379,847, Cl. 436-8.000.
Fryberg, Mario: *See*—
Lenoir, John; Jan, Gerald; and Fryberg, Mario, 4,379,819, Cl. 430-17.000.
Fryer, Rodney I.: *See*—
Field, George F.; Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,379,765, Cl. 260-245.600.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Kurihara, Tetsuo, 4,379,486, Cl. 165-153.000.
Fuji Koeki Corporation: *See*—
Takematsu, Yoshiyuki, 4,379,983, Cl. 315-151.000.
Fuji Photo Film Co., Ltd.: *See*—
Matsufuji, Akihiro; Ishiguro, Tadashi; and Tsuji, Nobuo, 4,379,809, Cl. 428-470.000.
Fujii, Setsuro; Sugimito, Mamoru; and Yaegashi, Takashi, to Torii & Co. Ltd. Phenylalanylarginine derivatives, process for producing same and method for measuring activity of enzymes using same. 4,379,764, Cl. 260-112.50R.
Fujii, Tatsumi: *See*—
Watanabe, Shoji; Miho, Takuya; and Fujii, Tatsumi, 4,379,915, Cl. 528-357.000.
Fujioka, Yoshiki: *See*—
Kohzai, Yoshinori; and Fujioka, Yoshiki, 4,379,987, Cl. 318-561.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Ueda, Ikuo; Takaya, Takao; Kobayashi, Masakazu; Masugi, Takashi; Takasugi, Hisashi; Kochi, Hiromu; and Kitaguchi, Tadashi, 4,379,922, Cl. 544-16.000.
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Kohzai, Yoshinori; and Fujioka, Yoshiki, 4,379,987, Cl. 318-561.000.
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Ishikawa, Hiroshi; Kojima, Takuhito; and Minamitani, Eiji, 4,380,064, Cl. 370-63.000.
Fujiwara, Akiko; Miyamoto, Chikara; and Okuda, Toru, to Hoffmann-La Roche Inc. Process for the manufacture of 1α-hydroxydehydroepiandrosterone. 4,379,842, Cl. 435-58.000.
Fukushima, Kiyoshi: *See*—
Andoh, Sadanari; Maeda, Junji; Fukushima, Kiyoshi; Yoneda, Hiroichi; and Jinushi, Naotomo, 4,380,018, Cl. 346-140.00R.
Funaki, Yuji; Tanaka, Shizuya; and Matsuo, Noritada, to Sumitomo Chemical Company, Limited. Production of triazolylvinyl ketones. 4,379,921, Cl. 542-458.000.
Funakoshi, Yasutomo; and Wakahata, Tamotsu, to Matsushita Electric Industrial Company, Limited. Rear projection screen for a color television projector. 4,379,617, Cl. 350-126.000.
Fung, Lai-Wo: *See*—
United States of America, National Aeronautics and Space Administration; and Fung, Lai-Wo, 4,380,046, Cl. 364-200.000.
Furuya, Katusuke, to Laurel Bank Machine Co., Ltd. Counting device for coin sorting and counting machine. 4,379,466, Cl. 133-3.00C.
Gabr, Saad Z. M. Electro-acoustic transducer means. 4,379,951, Cl. 179-101.000.
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Brost, Robert L.; and Gagle, Duane W., 4,379,655, Cl. 405-176.000.
Gallop, Paul M.; and Korb, Donald R., to Syntex (U.S.A.) Inc. Polymeric compositions and hydrogels formed therefrom. 4,379,864, Cl. 523-106.000.
Garascia, David C.: *See*—
Kaltz, Milton C.; Chojnowski, Edward M.; Garascia, David C.; Bauer, Barney J.; and George, Richard D., 4,379,586, Cl. 296-222.000.
Garland Manufacturing Company: *See*—
Kempel, John J.; and Otto, Ronald F., 4,379,480, Cl. 160-232.000.
Garner, Jimmy G.: *See*—
Carlock, Gaylord W.; Garner, Jimmy G.; Gatlin, Charles M.; Guinn, Kenneth F.; and Reyes, Peter A., 4,379,678, Cl. 416-98.000.
Garza, Elio M., to Investigacion Fic Fideicomiso. Gob distributor for glass or other material. 4,379,715, Cl. 65-225.000.
Gasper, Alton J.: *See*—
Clemens, Lawrence M.; and Gasper, Alton J., 4,379,763, Cl. 252-628.000.
Gast, Theodor: *See*—
Hamisch, Hans J.; Boruschweitz, Manfred; and Gast, Theodor, 4,379,404, Cl. 73-35.000.
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Carlock, Gaylord W.; Garner, Jimmy G.; Gatlin, Charles M.; Guinn, Kenneth F.; and Reyes, Peter A., 4,379,678, Cl. 416-98.000.
Gauthier, Jean A.; and Jirkovsky, Ivo, to Ayerst, McKenna & Harrison Ltd. 1,4,5,6-Tetrahydropyrimidine derivatives. 4,379,926, Cl. 544-122.000.
Geisel, Donald J., to General Electric Company. Printed circuit board electronic tester. 4,379,992, Cl. 324-158.00F.
Geisen, Karl: *See*—
Weyer, Rudi; Hitzel, Volker; Geisen, Karl; and Regitz, Gunter, 4,379,785, Cl. 424-244.000.
Geissbuhler, Hans, to C. Hoegger & Cie, A.G. Method and apparatus for producing skinless sausages. 4,379,356, Cl. 17-45.000.
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Slysh, Paul, 4,380,013, Cl. 343-753.000.
General Electric: *See*—
Merrill, Duane F., 4,379,902, Cl. 528-18.000.
General Electric Company: *See*—
Flowers, Ralph G., 4,379,916, Cl. 528-494.000.
Geisel, Donald J., 4,379,992, Cl. 324-158.00F.
Kelly, Peter B., 4,379,553, Cl. 273-51.000.
Mark, Victor; and Hedges, Charles V., 4,379,910, Cl. 528-202.000.
Mullersman, Ferdinand H.; and Blake, Charles R., 4,379,816, Cl. 429-91.000.
General Foods Corporation: *See*—
Staub, Herbert W.; Schanbacher, Larry M.; Zencheck, Jack D.; and Young, Cynthia L., 4,379,782, Cl. 424-180.000.
General Refractories Company: *See*—
Henry, Francis W., Jr.; and Banerjee, Subrata, 4,379,866, Cl. 523-140.000.
George, Kathleen F.: *See*—
Wagner, Burkhard E.; Goeke, George L.; Karol, Frederick J.; and George, Kathleen F., 4,379,758, Cl. 252-429.00B.
George, Richard D.: *See*—
Kaltz, Milton C.; Chojnowski, Edward M.; Garascia, David C.; Bauer, Barney J.; and George, Richard D., 4,379,586, Cl. 296-222.000.
Gerdau, Herbert: *See*—
Puschner, Manfred; and Gerdau, Herbert, 4,379,811, Cl. 428-555.000.

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Getscher, Philip E. Intramedullary hip pin and cortical plate. 4,379,451, Cl. 128-92.0CA.

Getts, Sidney A. Motion conversion mechanism. 4,379,362, Cl. 30-393.000.

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Rosenberg, Harry; Piester, Karl-Heinz; Eggenstein, Friedrich; and Terhorst, Gunter, 4,379,424, Cl. 92-13.410.
Wojaczek, Egon; Soliman, Mustafa; and Schulte, Juergen, 4,379,661, Cl. 405-299.000.

Gibbs, Ronald L.: *See—*
Shipley, Randall S.; Lowery, Kirby, Jr.; and Gibbs, Ronald L., 4,379,760, Cl. 252-429.00B.

Gibson-Egan Company: *See—*
Alemanni, James C., 4,379,505, Cl. 206-329.000.

Giles, Anthony F.: *See—*
Brown, David; Giles, Anthony F.; Cramer, Howard W.; Noble, H. Mary; Nisbet, Louis J.; Bushell, Michael E.; Weare, Glenis; and Caldwell, Ian Y., 4,379,920, Cl. 542-427.000.

Gist-Brocades N.V.: *See—*
Bruynes, Cornelis A.; and Jurriens, Theodorus K., 4,379,923, Cl. 544-26.000.

Glaxo Group Limited: *See—*
Brown, David; Giles, Anthony F.; Cramer, Howard W.; Noble, H. Mary; Nisbet, Louis J.; Bushell, Michael E.; Weare, Glenis; and Caldwell, Ian Y., 4,379,920, Cl. 542-427.000.

Godat, Jean; and Paget, Jean, to Fonderie & Ateliers des Sablons. Weight measuring balance. 4,379,496, Cl. 177-25.000.

Goeke, George L.; Wagner, Burkhard E.; and Karol, Frederick J., to Union Carbide Corporation. Impregnated polymerization catalyst, process for preparing, and use for ethylene copolymerization. 4,379,759, Cl. 252-429.00B.

Goeke, George L.: *See—*
Wagner, Burkhard E.; Goeke, George L.; Karol, Frederick J.; and George, Kathleen F., 4,379,758, Cl. 252-429.00B.

Goeth, Hanns: *See—*
Maier, Roland; Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Lechner, Uwe; and Goeth, Hanns, 4,379,784, Cl. 424-229.000.

Goldammer, Georg; and Schmitt, Ludwig, to Schubert & Salzer. Apparatus for interrupting the sliver supply in open-end spinning apparatus. 4,379,386, Cl. 57-405.000.

Goldowsky, Michael P., to North American Philips Corporation. Magnetic bearing. 4,379,598, Cl. 308-10.000.

Goldsmith, Riley G.: *See—*
Widiner, Karl J.; and Goldsmith, Riley G., 4,379,657, Cl. 405-195.000.

Goodwin, Robert J.: *See—*
Amundsen, Joseph; Goodwin, Robert J.; and Wetzel, William H., 4,379,810, Cl. 428-541.000.

Goodyear Tire & Rubber Company, The: *See—*
Frerking, Harlan W., Jr.; and Kelley, Mellis M., 4,379,895, Cl. 525-437.000.

Gordee, Robert S.: *See—*
Hull, Robert N.; and Gordee, Robert S., 4,379,781, Cl. 424-114.000.

Gorka, Gunther; and Stinshoff, Klaus, to C. H. Boehringer Sohn. Quantitative analysis of uric acid. 4,379,840, Cl. 435-10.000.

Gorter, Cornelis A.: *See—*
Middel, Jan; and Gorter, Cornelis A., 4,379,427, Cl. 101-35.000.

Goss, Gary J.: *See—*
Hirtle, Allen C.; and Goss, Gary J., 4,380,065, Cl. 370-96.000.

Goto, Hitoshi: *See—*
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Goto, Takeshi: *See—*
Iemura, Takusuke; Goto, Takeshi; and Komaki, Hiroshi, 4,379,602, Cl. 312-268.000.

Goudy, Paul R., Jr., to Goudy, Paul R., Jr.; Landis, Bruce J.; and Landis, Kenneth J. Fluid pump with dual diaphragm check valves. 4,379,681, Cl. 417-560.000.

Graef, John N., to Realist, Inc. Folding transparency (microfiche) viewer. 4,379,628, Cl. 353-73.000.

Graf, Hans: *See—*
Werle, Peter; Graf, Hans; and Walter, Erwin, 4,379,871, Cl. 523-331.000.

Granger, Charles C. Intake manifold mounted air and fuel mixture heater. 4,379,443, Cl. 123-549.000.

Grantham, LeRoy F.; and Johanson, James G., to Rockwell International Corporation. Process for separating solid particulates from a melt. 4,379,718, Cl. 75-24.000.

Graser, Fritz; and Seybold, Guenther, to BASF Aktiengesellschaft. Process for two-dimensionally concentrating light, and novel perylene-3,4,9,10-tetracarboxylic acid diimides. 4,379,934, Cl. 546-37.000.

Grasselli, Robert K.; Suresh, Dev D.; and Bridgeman, David R., to Standard Oil Co., The. Liquid phase ammoxidation of cyclohexanone and/or cyclohexanol. 4,379,925, Cl. 544-102.000.

Gravener, Roy D.; De Carlo, Alfred F.; and Nolles, Douglas G., to United States Surgical Corporation. Indicator for surgical stapler. 4,379,457, Cl. 128-334.00R.

Gray, James J.: *See—*
Gray, Joseph L.; and Gray, James J., 4,379,545, Cl. 254-8.00B.

Gray, Joseph L.; and Gray, James J., to Gray Manufacturing Co. Inc. Side lift jack for unibody automobiles. 4,379,545, Cl. 254-8.00B.

Gray Manufacturing Co. Inc.: *See—*
Gray, Joseph L.; and Gray, James J., 4,379,545, Cl. 254-8.00B.

Green, Bernard J.; and Chorosevic, Jerome J., to Speed Clip Manufacturing Corp. Superpositioned vehicle wheel balance weights and method. 4,379,596, Cl. 301-5.00B.

Greene, Richard F.: *See—*
Thomas, Richard E.; and Greene, Richard F., 4,379,979, Cl. 313-346.00R.

Gregory, David L.: *See—*
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Grieder, Alfred: *See—*
Fah, Hansjakob; and Grieder, Alfred, 4,379,938, Cl. 546-345.000.

Grimes, Patrick G.: *See—*
Tsien, Hsue C.; Newby, Kenneth R.; Grimes, Patrick G.; and Bellows, Richard J., 4,379,814, Cl. 429-42.000.

Gritter, Roy J.: *See—*
Economy, James; Gritter, Roy J.; and Hirsoka, Hiroyuki, 4,379,826, Cl. 430-141.000.

Groetschel, Karl M. Method of and apparatus for applying mat to the roof of a mine working. 4,379,660, Cl. 405-288.000.

Gross, David R., to J. M. Smucker Company, The. Method of concentrating fresh fruits. 4,379,796, Cl. 426-486.000.

Grossman, Robert D. Article display stand. 4,379,432, Cl. 108-153.000.

Grun, Charles: *See—*
Solomon, Frank; and Grun, Charles, 4,379,772, Cl. 264-49.000.

Grunewalder, Valentine J.: *See—*
Miller, John D.; and Grunewalder, Valentine J., 4,379,885, Cl. 525-108.000.

GTE Automatic Electric Labs Inc.: *See—*
Holden, James R., 4,379,993, Cl. 328-120.000.

GTE Laboratories Incorporated: *See—*
McColl, James R., 4,379,635, Cl. 356-387.000.
Proud, Joseph M., 4,379,982, Cl. 315-73.000.

GTE Products Corporation: *See—*
Kling, Michael R.; and Kackenmeister, Carl F., 4,379,690, Cl. 431-359.000.
Weir, Colin B., 4,380,089, Cl. 455-127.000.

Gubbe, Bernd; Krause, Klaus-Dieter; Neidhardt, Rudolf; and Schonemann, Otto, to Triumph-Adler A.G. Height and inclination adjustable support shelf. 4,379,429, Cl. 108-5.000.

Guile, Roy N., to United Technologies Corporation. Supersonic/supersonic fluid ejector. 4,379,679, Cl. 417-54.000.

Guinn, Kenneth F.: *See—*
Carlock, Gaylord W.; Garner, Jimmy G.; Gatlin, Charles M.; Guinn, Kenneth F.; and Reyes, Peter A., 4,379,678, Cl. 416-98.000.

Gurov, Evgeny I.: *See—*
Vakhnin, Gennady I.; Verty, Vladimir G.; Voronin, Pavel G.; Gurov, Evgeny I.; Isaikin, Vladimir G.; Mishakov, Vladimir N.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Tabakov, Vladimir P.; Tjunkin, Boris A.; and Fotieva, Ljudmila I., 4,379,592, Cl. 299-2.000.

Haas, David J.: *See—*
Juner, Adolph; Haas, David J.; and Rudd, Chester D., 4,379,481, Cl. 160-310.000.

Haas, Peter; and Freitag, Hans-Albrecht, to Bayer Aktiengesellschaft. Process for the production of polyurethanes using morpholine compounds as catalysts. 4,379,861, Cl. 521-115.000.

Hagiwara, Yutaka; Takada, Toshiaki; and Yamazaki, Tetu, to Nissan Motor Co., Ltd. Ventilated disk brake. 4,379,501, Cl. 188-218.0XL.

Hahn, Mark C.: *See—*
Eisenhard, Bruce T.; and Hahn, Mark C., 4,380,047, Cl. 364-200.000.

Hahn, Norbert; and Hipp, Steven J., to Rite-Hite Corporation. Releasable locking device. 4,379,354, Cl. 14-71.300.

Hainsworth, Thomas E.; and Houskamp, Robert W., to Bell & Howell, Company. Vehicle collision avoidance system. 4,379,497, Cl. 180-168.000.

Hajime Industries Ltd.: *See—*
Yoshida, Hajime, 4,379,636, Cl. 356-407.000.

Halicho, James J., to Timex Corporation. Timepiece case/backcover assembly. 4,379,643, Cl. 368-309.000.

Hall, David A., to Eli Lilly and Company. Electrolytic reduction of cephalosporin p-nitrobenzyl esters. 4,379,739, Cl. 204-72.000.

Hall, William F.: *See—*
Ho, William W.; and Hall, William F., 4,379,991, Cl. 324-58.50C.

Hallinger, Claude C.; and Kervistin, Robert, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.". Device for adjusting the clearance between moving turbine blades and the turbine ring. 4,379,677, Cl. 415-175.000.

Hallman, Robert W., to Energy Conversion Devices, Inc. Imaging structure with tellurium metal film and energy sensitive material thereon. 4,379,827, Cl. 430-166.000.

Halm, James M., to A. B. Dick Company. Composition for forming photoconductive coating containing a photoconductive donor and an acceptor-sensitizer. 4,379,823, Cl. 430-83.000.

Hamerdinger, Randolph W.: *See—*
Wang, Shing C.; and Hamerdinger, Randolph W., 4,380,078, Cl. 372-62.000.

Hamisch, Hans J.; Boruschweitz, Manfred; and Gast, Theodor, to Robert Bosch GmbH. Piezoelectric engine-knock sensor. 4,379,404, Cl. 73-35.000.

Hamm, Eddie J., to Otis Engineering Corporation. Latch for well tool. 4,379,488, Cl. 166-217.000.

Hancock, Mark W.: *See—*
Eisenberg, Steven K.; and Hancock, Mark W., 4,379,375, Cl. 47-65.000.

Handler, Laurence H.: *See*—
Norman, Oscar L.; and Handler, Laurence H., 4,379,746, Cl. 208-262.000.
Hannoosh, James G.; Harvey, Andrew C.; Harding, John C.; and Chandrasekhar, Ram, to Foster-Miller Associates, Inc. Linear pocket letdown device. 4,379,670, Cl. 414-217.000.
Hansen, Douglas E.; Johnson, Steven D.; and Motko, Richard L., to Cook Paint and Varnish Company. Insulation composition. 4,379,857, Cl. 521-54.000.
Hansen, Howard H.; Lasky, Jerome B.; and Silverman, Ronald R., to International Business Machines Corporation. Method of laser annealing of subsurface ion implanted regions. 4,379,727, Cl. 148-1.500.
Hanson, George D.: *See*—
Doninger, Joseph E.; and Hanson, George D., 4,379,691, Cl. 432-3.000.
Harada, Hiroshi: *See*—
Takada, Yukimitsu; Harada, Hiroshi; and Takubo, Shuji, 4,379,702, Cl. 440-77.000.
Hardesty, Edwin C., to Western Electric Company, Inc. Modular cord coupler jack having a disconnection encumbrance. 4,379,609, Cl. 339-91.00R.
Harding, John C.: *See*—
Hannoosh, James G.; Harvey, Andrew C.; Harding, John C.; and Chandrasekhar, Ram, 4,379,670, Cl. 414-217.000.
Harigaya, Makoto: *See*—
Nakamura, Hitoshi; Nishizima, Hideyo; Ema, Hideaki; Harigaya, Makoto; and Otomura, Satoshi, 4,379,820, Cl. 430-58.000.
Harkness, Donald M. Holder for a container. 4,379,541, Cl. 248-544.000.
Harman, John N., III, to Beckman Instruments, Inc. Gas analysis instrument having flow rate compensation. 4,379,402, Cl. 73-23.000.
Harris, Stephen E., to Stanford University. XUV Laser and method. 4,380,072, Cl. 372-5.000.
Harris, William D., to Burlington Industries, Inc. Electrostatic treatment of paper. 4,380,037, Cl. 361-214.000.
Hartmann, Rudolf: *See*—
Pietzsch, Ludwig; and Hartmann, Rudolf, 4,379,542, Cl. 248-561.000.
Harvey, Andrew C.: *See*—
Hannoosh, James G.; Harvey, Andrew C.; Harding, John C.; and Chandrasekhar, Ram, 4,379,670, Cl. 414-217.000.
Harvey Hubbell Incorporated: *See*—
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Hashizume, Shin: *See*—
Miyakawa, Seii; Ikeda, Manabu; Hashizume, Shin; and Iijima, Kazunori, 4,379,517, Cl. 226-189.000.
Hata, Hideo: *See*—
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,379,888, Cl. 525-211.000.
Hattori, Tadashi; Yamaguchi, Hiroaki; and Ootsuka, Yoshinori, to Nippon Soken, Inc. Knock detecting apparatus for internal combustion engines. 4,379,403, Cl. 73-35.000.
Hatzakis, Michael: *See*—
Canavello, Benjamin J.; and Hatzakis, Michael, 4,379,833, Cl. 430-325.000.
Hauser, William G., to Singer Company, The. Sewing machine cradle safety interlock. 4,379,601, Cl. 312-21.000.
Hauslein, Siegfried; Steinberger, Hans; Heigl, Willibald; Scheichl, Georg; and Kauderer, Erwin, to Bayerische Motoren Werke A.G. Motor vehicle seat and process relating thereto. 4,379,352, Cl. 5-471.000.
Hawk, Gary W.: *See*—
Clark, Richard P.; Frantz, Robert H.; Hawk, Gary W.; and Root, John A., 4,379,606, Cl. 339-17.0CF.
Hayama, Masashi: *See*—
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Hayashi, Yoshikazu: *See*—
Iwata, Masayosi; Douke, Harumi; Hayashi, Yoshikazu; Yokoyama, Tadashi; and Mizuta, Yukio, 4,379,954, Cl. 200-4.000.
Haynes, George R., to Shell Oil Company. Multifunctional coupling agent. 4,379,891, Cl. 525-342.000.
Hedenberg, William E. Universal air suspension system. 4,379,572, Cl. 280-711.000.
Hedges, Charles V.: *See*—
Mark, Victor; and Hedges, Charles V., 4,379,910, Cl. 528-202.000.
Heider, Joachim; Austel, Volkhard; Eberlein, Wolfgang; Kadatz, Rudolf; and Lillie, Christian, to Dr. Karl Thomae Gesellschaft mit beschrankter Haftung. 2-Phenyl-pyrimidones. 4,379,788, Cl. 424-251.000.
Heigl, Willibald: *See*—
Hauslein, Siegfried; Steinberger, Hans; Heigl, Willibald; Scheichl, Georg; and Kauderer, Erwin, 4,379,352, Cl. 5-471.000.
Heimreid, Ken. Method and means for the examination of uncoagulated blood. 4,379,849, Cl. 436-177.000.
Helling, Gunter; Ohlschlager, Hans; Himmelmann, Wolfgang; and Beck, Manfred, to Agfa-Gevaert Aktiengesellschaft. Photosensitive photographic recording material comprising a dyed layer. 4,379,838, Cl. 430-518.000.
Helling, Gunter: *See*—
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Hendershot, Homer; and Storrs, Charles M., to Lemco Tool Corporation. Insulation stripper for coaxial cable. 4,379,665, Cl. 408-204.000.
Henry, Francis W., Jr.; and Banerjee, Subrata, to General Refractories Company. Plugging refractory material having resin binder system. 4,379,866, Cl. 523-140.000.
Hercules Incorporated: *See*—
Zecher, David C., 4,379,883, Cl. 524-801.000.
Hermann Wiederhold GmbH Corp.: *See*—
Falkenburg, Hans R.; Krause, Siegfried; and McGuiness, Robert C., 4,379,909, Cl. 528-94.000.
Herwig, Walter; Klupfel, Kurt; Sikora, Helga; and Sprengel, Heide, to Hoechst Aktiengesellschaft. Process for cleaning copper-containing metal surfaces. 4,379,834, Cl. 430-329.000.
Hettel, David A.: *See*—
Cole, John N.; and Hettel, David A., 4,379,808, Cl. 428-438.000.
Hewitt, Ewan C.: *See*—
Hope, Thomas; and Hewitt, Ewan C., 4,379,396, Cl. 72-13.000.
Hildeman, Gregory J.; and Sanders, Robert E., Jr., to Aluminum Company of America. Aluminum powder alloy product for high temperature application. 4,379,719, Cl. 419-60.000.
Hillman, Stephen M.: *See*—
Riewerts, Paul R.; and Hillman, Stephen M., 4,379,491, Cl. 172-328.000.
Himmelmann, Wolfgang: *See*—
Helling, Gunter; Ohlschlager, Hans; Himmelmann, Wolfgang; and Beck, Manfred, 4,379,838, Cl. 430-518.000.
Hinsperger, Cornelius A. Debris trap for pool cover. 4,379,351, Cl. 4-498.000.
Hipp, Steven J.: *See*—
Hahn, Norbert; and Hipp, Steven J., 4,379,354, Cl. 14-71.300.
Hirai, Seiichi: *See*—
Otsuka, Nobuyuki; and Hirai, Seiichi, 4,379,706, Cl. 464-111.000.
Hiraki, Shunichi: *See*—
Kumamaru, Kuniaki; Hiraki, Shunichi; and Yonezawa, Toshio, 4,379,726, Cl. 148-175.000.
Hirao, Katsumi: *See*—
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Cocks, Michael H.; and Evans, Gary A., 4,379,495, Cl. 177-1.000.
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Andersen, Heinz-Erhardt; Brebels, Jack J.; Matschke, Klaus; and Scheier, Franz, 4,379,774, Cl. 264-284.000.
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Ribi, Valentino, 4,379,567, Cl. 280-276.000.
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Thompson, James L.; and Hornkohl, Owen T., 4,379,426, Cl. 100-100.000.
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Alexander, Lee J.; Vanberg, Harold E.; and King, Clyde E., 4,379,372, Cl. 40-10.00C.
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Rundell, Herbert A.; and Horton, Eugene B., Jr., 4,379,556, Cl. 277-12.000.
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Hainsworth, Thomas E.; and Houskamp, Robert W., 4,379,497, Cl. 180-168.000.
Howard, H. Taylor, to Chaparral Communications, Inc. Feed horn for reflector antennae. 4,380,014, Cl. 343-786.000.
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Juracka, Frantisek; and Hudecek, Slavko, 4,379,868, Cl. 523-201.000.
Huff, Leslie G. Telephone switch retaining apparatus. 4,379,953, Cl. 179-178.000.
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Foege, Ronald E.; and Kerek, Leslie L., 4,379,611, Cl. 339-217.00S.
Parrish, William J.; and Fletcher, Christopher L., 4,380,056, Cl. 365-183.000.
Pastor, Antonio C.; Pastor, Ricardo C.; and Arita, Kaneto, 4,379,733, Cl. 156-616.00R.
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Kobayashi, Kiyoshi; and Suga, Shuji, 4,379,355, Cl. 15-101.000.
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Brandstetr, Jiri; Huleja, Josef; and Kupec, Josef, 4,379,775, Cl. 422-51.000.
Hull, Robert N.; and Gordee, Robert S., to Eli Lilly and Company. Antibiotic compositions. 4,379,781, Cl. 424-114.000.
Hunter, Roy D. Combination handling and conveying apparatus. 4,379,672, Cl. 414-565.000.
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Borden, Peter G.; Bell, Ronald L.; and Hyder, Syed B., 4,379,944, Cl. 136-259.000.
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Mori, Kinji; Ihara, Hirokazu; and Matsumaru, Hiroshi, 4,380,061, Cl. 370-16.000.
Iijima, Kazunori: *See*—
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Shimbashi, Ichiro; Ikegami, Hiroshi; and Bando, Hideharu, 4,379,547, Cl. 266-103.000.
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Mizuno, Toshiro; and Imai, Kazuo, 4,379,946, Cl. 178-3.000.
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Falkenburg, Hans R.; Krause, Siegfried; and McGuiness, Robert C., 4,379,909, Cl. 528-94.000.
Parr, Andrew F., 4,380,044, Cl. 363-21.000.
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Kowal, Leonard J., 4,379,399, Cl. 72-388.000.
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Kimura, Minoru; and Ina, Teruo, 4,379,999, Cl. 336-84.00C.
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Rovelli, Giuseppe, 4,379,654, Cl. 405-53.000.
Ingram Corporation: *See*—
Frias, Robert, 4,379,676, Cl. 414-748.000.
Inoue-Japax Research Incorporated: *See*—
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Mimoun, Hubert; Charpentier, Robert; and Roussel, Michel, 4,379,942, Cl. 568-385.000.
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Laviano, Edmund G.; and Lefebvre, Gerald S., 4,379,411, Cl. 73-861.780.
Interieur Forma S.A.: *See*—
Marino, Mario H. S., 4,379,589, Cl. 297-299.000.
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Beardsley, Brent C.; and Brailey, Allen C., 4,380,067, Cl. 371-11.000.
Bethune, Donald S., 4,380,076, Cl. 372-54.000.
Canavello, Benjamin J.; and Hatzakis, Michael, 4,379,833, Cl. 430-325.000.
Dalal, Hormazdyar M.; and Lowney, John J., 4,379,832, Cl. 430-315.000.
Debord, Pierre; and Marijon, Jean-Louis, 4,380,005, Cl. 340-347.0AD.
Economy, James; Gritter, Roy J.; and Hiraoka, Hiroyuki, 4,379,826, Cl. 430-141.000.
Hansen, Howard H.; Lasky, Jerome B.; and Silverman, Ronald R., 4,379,727, Cl. 148-1.500.
Janson, Philippe A.; Muller, Hans R.; and Rothauser, Ernst H., 4,380,063, Cl. 370-60.000.
Kotecha, Harish N.; Noble, Wendell P., Jr.; and Wiedman, Francis W., III, 4,380,057, Cl. 365-185.000.
Nazzal, Adel I.; and Mueller-Westerhoff, Ulrich T., 4,379,740, Cl. 204-129.000.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M., 4,379,754, Cl. 252-174.110.
International Minerals & Chemical Corp.: *See*—
Doninger, Joseph E.; and Hanson, George D., 4,379,691, Cl. 432-3.000.
International Petroleum Engineering Corporation: *See*—
Sheshtawy, Adel, 4,379,494, Cl. 175-325.000.
International Telephone and Telegraph Corporation: *See*—
Ahmed, Fahim, 4,379,950, Cl. 179-18.0ES.
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Garza, Elio M., 4,379,715, Cl. 65-225.000.
Isaikin, Vladimir G.: *See*—
Vakhnin, Gennady I.; Verty, Vladimir G.; Voronin, Pavel G.; Gurov, Evgeny I.; Isaikin, Vladimir G.; Mishakov, Vladimir N.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Tabakov, Vladimir P.; Tjunkin, Boris A.; and Fotieva, Ljudmila I., 4,379,592, Cl. 299-2.000.
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Ishii, Toshiaki, to Mitsubishi Denki Kabushiki Kaisha. Thyristor convertor failure detection device. 4,380,045, Cl. 363-54.000.
Ishikawa, Hiroshi; Kojima, Takuhito; and Minamitani, Eiji, to Fujitsu Limited. Digital audio signal control system for a timedivision switching system. 4,380,064, Cl. 370-63.000.
Ishikura, Shin-Ichi; Kanda, Kazunori; and Mizuguchi, Ryuzo, to Nippon Paint Co., Ltd. Amphoteric amino sulfonate derivatives of epoxy resins. 4,379,872, Cl. 523-406.000.
Ishizuka, Yutaka, to Diesel Kiki Co., Ltd. Double-acting piston for swash-plate type compressors. 4,379,425, Cl. 92-71.000.
Ito, Osamu; and Watanabe, Isao, to Mitsubishi Denki Kabushiki Kaisha. Recording system for recording information on record medium by using energy beam. 4,380,015, Cl. 346-108.000.
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Wibrow, Guter, 4,379,358, Cl. 24-136.00R.

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Iwata, Masayosi; Douke, Harumi; Hayashi, Yoshikazu; Yokoyama, Tadashi; and Mizuta, Yukio, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Lever operated plural switch assembly. 4,379,954, Cl. 200-4.000.

Izaki, Naoyuki: *See*—
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J. M. Smucker Company, The: *See*—
Gross, David R., 4,379,796, Cl. 426-486.000.

J. M. Voith GmbH: *See*—
Schiel, Christian, 4,379,369, Cl. 34-110.000.

Jaffee, Alan M.: *See*—
Nowicki, Casimir W.; and Jaffee, Alan M., 4,379,525, Cl. 241-20.000.

Jager, Walter: *See*—
Beneke, Wolfgang; and Jager, Walter, 4,379,357, Cl. 19-105.000.

Jan, Gerald: *See*—
Lenoir, John; Jan, Gerald; and Fryberg, Mario, 4,379,819, Cl. 430-17.000.

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Coats, Montgomery R.; and Janssen, Gwen V., 4,380,004, Cl. 340-34.000.

Japan Styrene Paper Corporation: *See*—
Hirosawa, Kuninori; and Shimada, Sumio, 4,379,859, Cl. 521-59.000.

Jeco Co., Ltd.: *See*—
Takamatsu, Mashiro; Nakao, Makoto; and Ogawa, Isao, 4,380,043, Cl. 362-26.000.

Jeffris, Larry L.: *See*—
Miller, Samuel A.; and Jeffris, Larry L., 4,379,624, Cl. 350-486.000.

Jenkins, Allan D.; Appelen, John T.; and Lind, Nils, to Railway Track-Work Company. Track skeletonizer. 4,379,371, Cl. 37-104.000.

Jinda, Kazuya: *See*—
Ashitaka, Hidetomo; Oizumi, Kyohei; Jinda, Kazuya; and Inaishi, Kazutoshi, 4,379,889, Cl. 525-247.000.

Jinushi, Naotomo: *See*—
Andoh, Sadanari; Maeda, Junji; Fukushima, Kiyoshi; Yoneda, Hiroichi; and Jinushi, Naotomo, 4,380,018, Cl. 346-140.00R.

Jirkovsky, Ivo: *See*—
Gauthier, Jean A.; and Jirkovsky, Ivo, 4,379,926, Cl. 544-122.000.

Joffe, Edward J., to Strauss, Howard, a part interest. Blade holder and dispenser. 4,379,514, Cl. 221-279.000.

Johanson, James G.: *See*—
Grantham, LeRoy F.; and Johanson, James G., 4,379,718, Cl. 75-24.000.

Johnson, John R.; and Brydolf, Robert, to Acme General Corporation. Drawer with removable handle. 4,379,603, Cl. 312-320.000.

Johnson & Johnson: *See*—
Korpman, Ralf, 4,379,806, Cl. 428-354.000.

Johnson, Michael R.: *See*—
Melvin, Lawrence S., Jr.; and Johnson, Michael R., 4,379,783, Cl. 424-184.000.

Johnson, Steven D.: *See*—
Hansen, Douglas E.; Johnson, Steven D.; and Motko, Richard L., 4,379,857, Cl. 521-54.000.

Jones, Donald H.: *See*—
Clikeman, Richard R.; Jones, Donald H.; Shortridge, Thomas J.; and Troy, Edward J., 4,379,876, Cl. 524-109.000.

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Roussin, Michael A.; Jones, Steven D.; and Woody, Albert L., 4,379,595, Cl. 299-37.000.

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Corbacho, Carlos J., 4,379,562, Cl. 279-5.000.

Judell, Neil H. K. Method and apparatus for removing cardiac artifact in impedance plethysmographic respiration monitoring. 4,379,460, Cl. 128-671.000.

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Rock, Erich; and Brunner, Josef, 4,379,604, Cl. 312-330.00R.

Juner, Adolph; Haas, David J.; and Rudd, Chester D., to North American Philips Corporation. X-Ray apparatus and closure mechanism therefor. 4,379,481, Cl. 160-310.000.

Juracka, Frantisek; and Hudecek, Slavko, to Ceskoslovenska akademie ved. Method for producing hydrophilic fillers for plastics and rubbers. 4,379,868, Cl. 523-201.000.

Jurriens, Theodorus K.: *See*—
Bruynes, Cornelis A.; and Jurriens, Theodorus K., 4,379,923, Cl. 544-26.000.

JWI Ltd.: *See*—
MacBean, Donald G., 4,379,735, Cl. 162-348.000.

Kabushiki Kaisha Daini Seikosha: *See*—
Maeda, Katsutoshi, 4,379,646, Cl. 400-636.000.

Kabushiki Kaisha Fujikoshi: *See*—
Yoshimoto, Hisanari; Tonomura, Taka; and Takamura, Takuo, 4,379,667, Cl. 409-234.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Asari, Akira; Noyori, Tatsuhiko; and Takehata, Tetsuro, 4,379,398, Cl. 72-273.500.

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Maezawa, Shuji; and Murata, Masami, 4,379,641, Cl. 368-74.000.

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Iwata, Masayosi; Douke, Harumi; Hayashi, Yoshikazu; Yokoyama, Tadashi; and Mizuta, Yukio, 4,379,954, Cl. 200-4.000.

Kackenmeister, Carl F.: *See*—
Kling, Michael R.; and Kackenmeister, Carl F., 4,379,690, Cl. 431-359.000.

Kadatz, Rudolf: *See*—
Heider, Joachim; Austel, Volkhard; Eberlein, Wolfgang; Kadatz, Rudolf; and Lillie, Christian, 4,379,788, Cl. 424-251.000.

Kaizer, Adrianus J. M.; and Kopinga, Wiert, to U.S. Philips Corporation. Mechanical filter for an electrodynamic transducer. 4,379,952, Cl. 179-115.5PC.

Kaltz, Milton C.; Chojnowski, Edward M.; Garascia, David C.; Bauer, Barney J.; and George, Richard D., to American Sunroof Corporation. Sliding roof panel assembly. 4,379,586, Cl. 296-222.000.

Kam, Lit-Yan: *See*—
Olsson, Billy E.; and Kam, Lit-Yan, 4,379,608, Cl. 339-75.0MP.

Kamigane, Yoshihiro: *See*—
Konishi, Seizi; Tashiro, Kazuyuki; Kamigane, Yoshihiro; Sakurai, Takakazu; Tanifuji, Shinya; and Morooka, Yasuo, 4,379,395, Cl. 72-8.000.

Kamino, Kyoichi, to Nissan Motor Co., Ltd. Parking brake cable adjusting device. 4,379,500, Cl. 188-196.00B.

Kanazawa, Takato; Mori, Keijiro; Kusunoki, Shigeru; Nishii, Kazunari; and Nobue, Tomotaka, to Matsushita Electric Industrial Co., Ltd. Method of food heating control by detecting liberated gas or vapor and temperature of food. 4,379,964, Cl. 219-492.000.

Kanda, Kazunori: *See*—
Ishikura, Shin-Ichi; Kanda, Kazunori; and Mizuguchi, Ryuzo, 4,379,872, Cl. 523-406.000.

Kaneko, Isamu: *See*—
Yamabe, Masaaki; Munekata, Seiji; Kumai, Seisaku; and Kaneko, Isamu, 4,379,768, Cl. 260-544.00F.

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Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,379,888, Cl. 525-211.000.

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Karol, Frederick J.: *See*—
Goeke, George L.; Wagner, Burkhard E.; and Karol, Frederick J., 4,379,759, Cl. 252-429.00B.
Wagner, Burkhard E.; Goeke, George L.; Karol, Frederick J.; and George, Kathleen F., 4,379,758, Cl. 252-429.00B.

Kasai, Shozo: *See*—
Okada, Yasunori; and Kasai, Shozo, 4,379,879, Cl. 524-186.000.

Kasamatsu, Mikizo. Electric safety device. 4,380,001, Cl. 337-4.000.

Kashiwagi, Hidehiro, to Taiyo Denko Kabushiki Kaisha. Method for reclaiming waste thermoplastic resin film. 4,379,724, Cl. 134-1.000.

Katagiri, Takeshi; and Tsuchifuji, Takakazu, to Yoshizuka Seiki Co., Ltd. Press for powder metallurgy. 4,379,684, Cl. 425-78.000.

Kauderer, Erwin: *See*—
Hauslein, Siegfried; Steinberger, Hans; Heigl, Willibald; Scheichl, Georg; and Kauderer, Erwin, 4,379,352, Cl. 5-471.000.

Kaule, Walter: *See*—
Bickel, Wolf; Kaule, Walter; and Primbsch, Erik, 4,379,633, Cl. 356-359.000.

Kawai Musical Instrument Mfg. Co., Ltd.: *See*—
Deutsch, Ralph, 4,379,420, Cl. 84-1.030.

Kawakami, Hideaki; Kitazima, Masaaki; Izaki, Naoyuki; and Nagae, Yoshiharu, to Hitachi, Ltd. Method of driving a matrix type phase transition liquid crystal display device to obtain a holding effect and improved response time for the erasing operation. 4,380,008, Cl. 340-784.000.

Kazlauskas, Gasparas. Welding apparatus designed particularly for use within a confined area. 4,379,963, Cl. 219-136.000.

Kehr, Wolfgang: *See*—
Horowski, Reinhard; Kehr, Wolfgang; Sauer, Gerhard; Eder, Ulrich; and Lorenz, Hans P., 4,379,790, Cl. 424-261.000.

Keller, A. Kent, to Whey Systems, Inc. Hot air drier. 4,379,368, Cl. 34-57.00R.

Kelley, Mellis M.: *See*—
Frerking, Harlan W., Jr.; and Kelley, Mellis M., 4,379,895, Cl. 525-437.000.

Kelly, Peter B., to General Electric Company. Bowling lane with fire retardant decorative surface. 4,379,553, Cl. 273-51.000.

Kelm, Dan W.: *See*—
Klein, Merv V.; Kelm, Dan W.; and Din, Salah U., 4,379,664, Cl. 406-68.000.

Kelsey-Hayes Co.: *See*—
Neill, Daniel L.; and Weiner, Paul, 4,380,002, Cl. 338-153.000.

Kemp, Willard E. Process for hot isostatic pressing of a metal workpiece. 4,379,725, Cl. 148-4.000.

Kempel, John J.; and Otto, Ronald F., to Garland Manufacturing Company. Energy efficient garage door construction and the like. 4,379,480, Cl. 160-232.000.

Kempf, Paul S., to Kempf, Paul S. Optical comparator and inspection apparatus. 4,379,647, Cl. 401-262.000.

Kendall, Debra L.; Watson, James M.; and Wright, Danny P., to Cosden Technology, Inc. Method and apparatus for inhibiting the formation of polymerized vinylaromatic compounds during distillative purification of vinylaromatic monomer. 4,379,736, Cl. 203-9.000.

Kerek, Leslie L.: *See*—
Foege, Ronald E.; and Kerek, Leslie L., 4,379,611, Cl. 339-217.00S.

Kerkman, Thomas W., to Dresser Industries, Inc. Articulated tractor loader with side rear view mirrors. 4,379,568, Cl. 280-400.000.

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Hallinger, Claude C.; and Kervistin, Robert, 4,379,677, Cl. 415-175.000.
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Erickson, Kent E., 4,379,620, Cl. 350-387.000.
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Kidd, Patrick D.: *See—*
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Stuart, Richard L.; and Killmeyer, Fred C., 4,380,062, Cl. 370-20.000.
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King, Charles H., to Boeing Company, The. Grounding terminal for lightning diverter strip. 4,380,039, Cl. 361-218.000.
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Kirst, Herbert A., to Eli Lilly and Company. 6''-(Substituted)-apramycin antibiotic derivatives and intermediates and starting materials therefor. 4,379,917, Cl. 536-16.800.
Kishi, Norimasa; and Suzuki, Tadashi, to Nissan Motor Co., Ltd. Shift control system for a vehicle automatic transmission. 4,380,048, Cl. 364-424.100.
Kissich, Arnulf: *See—*
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Engeler, Paul; Sonderegger, Hans C.; and Wolfer, Peter, 4,379,405, Cl. 73-167.000.
Kitagawa, Katsuhisa: *See—*
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Kitajima, Toshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Reverse flow cooled dynamoelectric machine. 4,379,975, Cl. 310-59.000.
Kitamura, Akihiko: *See—*
Mizuno, Yoshiro; and Kitamura, Akihiko, 4,379,536, Cl. 248-73.000.
Kitamura, Takashi, to Canon Kabushiki Kaisha. Apparatus having a copier function and a printer function. 4,379,631, Cl. 355-14.00R.
Kitano, Junjiro: *See—*
Matsuyama, Mitsuo; Ohhinata, Ichiro; and Kitano, Junjiro, 4,380,021, Cl. 357-15.000.
Kitazima, Masaaki: *See—*
Kawakami, Hideaki; Kitazima, Masaaki; Izaki, Naoyuki; and Nagae, Yoshiharu, 4,380,008, Cl. 340-784.000.
Klancnik, Adolph V.; and Klancnik, Kenneth A., to Universal Automatic Corporation. Automatic turret lathe. 4,379,415, Cl. 82-36.00A.
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Klancnik, Adolph V.; and Klancnik, Kenneth A., 4,379,415, Cl. 82-36.00A.
Klein, Merv V.; Kelm, Dan W.; and Din, Salah U., to Prasco Super Seeder Ltd. Seed cup assembly. 4,379,664, Cl. 406-68.000.
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Klouda, John F.: *See—*
Lom, Duane L.; and Klouda, John F., 4,379,484, Cl. 165-16.000.
Klupfel, Kurt: *See—*
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Knowles, Albert H., to Rines, Robert H.; and Rines, Carol M., part interest to each. Water-turbulence light-shielding method and apparatus for confined-volume fish growth and the like. 4,379,436, Cl. 119-3.000.
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Kobayashi, Takehiro, to Ryobi Limited. Fishing reel. 4,379,530, Cl. 242-220.000.
Koch, Richard L. Trailer hitch adaptor. 4,379,569, Cl. 280-415.00A.
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Koenig, Herbert G., Jr.: *See—*
Allen, Louis B., Jr.; and Koenig, Herbert G., Jr., 4,380,075, Cl. 372-44.000.
Koepke, Gunther: *See—*
Schnoring, Hildegard; Schranz, Karl-Wilhelm; and Koepke, Gunther, 4,379,836, Cl. 430-377.000.
Kohl, Paul A., to Bell Telephone Laboratories, Incorporated. Electroplating zinc. 4,379,738, Cl. 204-55.00R.
Kohzai, Yoshinori; and Fujioka, Yoshiki, to Fujitsu Fanuc Limited. Spindle rotation control system. 4,379,987, Cl. 318-561.000.
Kojima Puresu Kogyo Kabushiki Kaisha: *See—*
Mizuno, Yoshiro; and Kitamura, Akihiko, 4,379,536, Cl. 248-73.000.
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Ishikawa, Hiroshi; Kojima, Takuhito; and Minamitani, Eiji, 4,380,064, Cl. 370-63.000.
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Iemura, Takusuke; Goto, Takeshi; and Komaki, Hiroshi, 4,379,602, Cl. 312-268.000.
Komeda, Yorio: *See—*
Takahashi, Sadayuki; Komeda, Yorio; Tachibana, Matsuo; and Nosaka, Kenkichi, 4,379,673, Cl. 414-686.000.
Konietzny, Alfred; and Bartz, Wilfried, to Chemische Werke Huels, Aktiengesellschaft. Water-soluble polymers carrying quaternary ammonium groups, their preparation and use. 4,379,890, Cl. 525-332.800.
Konishi, Seizi; Tashiro, Kazuyuki; Kamigane, Yoshihiro; Sakurai, Takakazu; Tanifuji, Shinya; and Morooka, Yasuo, to Hitachi, Ltd. Interstand tension control system and method for tandem rolling mill. 4,379,395, Cl. 72-8.000.
Kono, Shinichi: *See—*
Watanabe, Tadahiko; and Kono, Shinichi, 4,379,852, Cl. 501-87.000.
Kopinga, Wiert: *See—*
Kaizer, Adrianus J. M.; and Kopinga, Wiert, 4,379,952, Cl. 179-115.5PC.
Korb, Donald R.: *See—*
Gallop, Paul M.; and Korb, Donald R., 4,379,864, Cl. 523-106.000.
Kornylak, Andrew T., to Kornylak Corporation. Gravity rollerway conveyor. 4,379,503, Cl. 193-37.000.
Kornylak Corporation: *See—*
Kornylak, Andrew T., 4,379,503, Cl. 193-37.000.
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Borisov, Vladimir S.; and Korovin, Vyacheslav V., 4,380,006, Cl. 340-347.0CC.
Korpman, Ralf, to Johnson & Johnson. Pressure-sensitive adhesive tape and process. 4,379,806, Cl. 428-354.000.
Kotecha, Harish N.; Noble, Wendell P., Jr.; and Wiedman, Francis W., III, to International Business Machines Corporation. Electrically alterable double dense memory. 4,380,057, Cl. 365-185.000.
Kowal, Leonard J., to Imperial Clevite Inc. Tube bender construction. 4,379,399, Cl. 72-388.000.
Kowalik, Peter M.: *See—*
Cleaveland, Charles M.; and Kowalik, Peter M., 4,379,956, Cl. 200-48.00A.
Kozawa, Akiya, to Union Carbide Corporation. Organic solvent-treated manganese dioxide-containing cathodes. 4,379,817, Cl. 429-224.000.
Koziol, Konrad: *See—*
Rathjen, Hans-Carl; and Koziol, Konrad, 4,379,742, Cl. 204-286.000.
Krafft, Werner; Helling, Gunter; Matschke, Guunther; and Boie, Immo, to Agfa-Gevaert Aktiengesellschaft. Photographic material containing a temporary barrier layer applied from an organic solution. 4,379,829, Cl. 430-215.000.
Krajewski, Zdzistaw A. A., to Bayly Engineering Limited. Phase directional antenna array and phased ring combiner for radio direction finding. 4,380,010, Cl. 343-113.00R.
Krake, Guss L., to Magnetic Peripherals Inc. Track centering servo pulse noise filter. 4,380,034, Cl. 360-77.000.
Krakow, Kalman. Intermeshing passage manifold. 4,379,487, Cl. 165-165.000.
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Gubbe, Bernd; Krause, Klaus-Dieter; Neidhardt, Rudolf; and Schonemann, Otto, 4,379,429, Cl. 108-5.000.
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Falkenburg, Hans R.; Krause, Siegfried; and McGuiness, Robert C., 4,379,909, Cl. 528-94.000.
Krautkramer-Branson, Inc.: *See—*
Bickel, Wolf; Kaule, Walter; and Primbsch, Erik, 4,379,633, Cl. 356-359.000.
Primbsch, Erik; and Bickel, Wolf, 4,379,409, Cl. 73-643.000.
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Stoev, Stoycho M.; Dshendova, Shtelyana D.; Stoyanov, Kiril N.; Dochev, Raycho V.; and Krestev, Tzvetan P., 4,379,714, Cl. 65-19.000.
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Kapralis, Imants P.; and Krukle, Harry, 4,379,448, Cl. 126-263.000.
Krupp, Viktor A.: *See—*
Qualitz, Marion; and Krupp, Viktor A., 4,379,721, Cl. 106-21.000.
Krusmark, Richard H. Safety device for ladders. 4,379,498, Cl. 182-107.000.
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Polizzotti, Richard S.; and Krutenat, Richard C., 4,379,745, Cl. 208-132.000.
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Takahashi, Sadayuki; Komeda, Yorio; Tachibana, Matsuo; and Nosaka, Kenkichi, 4,379,673, Cl. 414-686.000.

Kubota, Yutaka, to Stanley Electric Co. Ltd. Method for flashing a stroboscope for use with judging the good or bad of an object to be inspected. 4,380,026, Cl. 358-106.000.

Kuchler, Fritz, to Brain Dust Patents Establishment. Food-slicing machine and method. 4,379,416, Cl. 83-23.000.

Kuenzel, Rainer. Thread protector apparatus. 4,379,471, Cl. 138-89.000.

Kuhn, Michael H.: *See*—
Ney, Hermann; and Kuhn, Michael H., 4,379,948, Cl. 179-1.0SC.

Kumai, Seisaku: *See*—
Yamabe, Masaaki; Munekata, Seiji; Kumai, Seisaku; and Kaneko, Isamu, 4,379,768, Cl. 260-544.00F.

Kumamaru, Kuniaki; Hiraki, Shunichi; and Yonezawa, Toshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing semiconductor device utilizing outdiffusion and epitaxial deposition. 4,379,726, Cl. 148-175.000.

Kuno, Akira; Matsumoto, Muneaki; and Numata, Koji, to Nippon Soken, Inc. Direction finding system. 4,379,366, Cl. 33-361.000.

Kunze, Dieter, to Siemens Aktiengesellschaft. Longitudinally divided cable sleeve of a shrinkable material. 4,379,473, Cl. 138-167.000.

Kupec, Josef: *See*—
Brandstetr, Jiri; Huleja, Josef; and Kupec, Josef, 4,379,775, Cl. 422-51.000.

Kurihara, Tetsuo, to Fuji Jukogyo Kabushiki Kaisha. Heat exchanger. 4,379,486, Cl. 165-153.000.

Kurtz, Clark N.: *See*—
Mir, Jose M.; Varner, Jerry R.; and Kurtz, Clark N., 4,380,023, Cl. 358-75.000.

Kurz, Wolfgang; and Leunig, Rainer, to Robert Bosch GmbH. System for preventing damage to a battery charger due to application of a battery with wrong polarity. 4,379,989, Cl. 320-26.000.

Kusters, Eduard: *See*—
Holderer, Horst; and Kutz, Johannes, 4,379,353, Cl. 8-149.100.

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Kanazawa, Takato; Mori, Keijiro; Kusunoki, Shigeru; Nishii, Kazunari; and Nobue, Tomotaka, 4,379,964, Cl. 219-492.000.

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Holderer, Horst; and Kutz, Johannes, 4,379,353, Cl. 8-149.100.

Kuwagaki, Hiroshi; Yano, Kohzo; and Takechi, Sadatoshi, to Sharp Kabushiki Kaisha. Electro-chromic displays. 4,379,619, Cl. 350-357.000.

Kyowa Chemical Industry Co., Ltd.: *See*—
Miyata, Shigeo, 4,379,882, Cl. 524-436.000.

Landis, Bruce J.: *See*—
Goudy, Paul R., Jr., 4,379,681, Cl. 417-560.000.

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Spencer, David H.; Steiner, Marvin E.; and Lang, Donald H., 4,380,066, Cl. 371-10.000.

Langr, Oldrich, to Sigma concern. Apparatus having shaping jaws for manufacturing bodies of spindle-type shapes. 4,379,397, Cl. 72-95.000.

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Larkin, William A., to M&T Chemicals Inc. Food-grade vinyl halide polymer compositions stabilized with monoalkyltin compounds. 4,379,878, Cl. 524-181.000.

Larson, Betty D. Sun-out face shield. 4,379,349, Cl. 2-9.000.

Larson, David N., to Mostek Corporation. Static RAM memory cell. 4,380,055, Cl. 365-154.000.

Lasky, Jerome B.: *See*—
Hansen, Howard H.; Lasky, Jerome B.; and Silverman, Ronald R., 4,379,727, Cl. 148-1.500.

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Furuya, Katusuke, 4,379,466, Cl. 133-3.00C.

Laurien, Rolf: *See*—
Mateika, Dieter; and Laurien, Rolf, 4,379,853, Cl. 501-135.000.

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Anderson, Larry C.; Lausch, Robert C.; and Sydorko, Peter J., 4,379,730, Cl. 156-324.000.

Laviano, Edmund G.; and Lefebvre, Gerald S., to Interactive Design Inc. Flow transducer. 4,379,411, Cl. 73-861.780.

Lechner, Uwe: *See*—
Maier, Roland; Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Lechner, Uwe; and Goeth, Hanns, 4,379,784, Cl. 424-229.000.

Lefebvre, Gerald S.: *See*—
Laviano, Edmund G.; and Lefebvre, Gerald S., 4,379,411, Cl. 73-861.780.

Legris, Marcel. Electrically controlled level. 4,379,367, Cl. 33-367.000.

Lehureau, Jean-Claude; Magna, Henriette; and Thirouard, Michel, to Thomson-CSF. Protected optical disc. 4,380,016, Cl. 346-135.100.

Leichtl, Ludwig, to Ex-Cell-O Corporation. Radiator assembly (bayonet lock). 4,379,574, Cl. 285-211.000.

Leineweber, Gunther; and Warnecke, Rolf, to Volkswagenwerk AG. Hydraulic amplifier. 4,379,423, Cl. 91-373.000.

Lemco Tool Corporation: *See*—
Hendershot, Homer; and Storrs, Charles M., 4,379,665, Cl. 408-204.000.

Lenoir, John; Jan, Gerald; and Fryberg, Mario, to Ciba-Geigy AG. Color-photographic recording material for the silver dye bleach process. 4,379,819, Cl. 430-17.000.

Leonard, John F.: *See*—
Fritts, David H.; and Leonard, John F., 4,379,410, Cl. 73-809.000.

Lerner, Stanley, to Color Communications, Inc. Latex mylar chip. 4,379,696, Cl. 434-98.000.

Leunig, Rainer: *See*—
Kurz, Wolfgang; and Leunig, Rainer, 4,379,989, Cl. 320-26.000.

Leventer, William; and Shulman, Lawrence M. Data encoding for television. 4,380,027, Cl. 358-147.000.

Levitt, George; and Weigel, Russell C., Jr., to Du Pont de Nemours, E. I., and Company. Method of controlling weeds in conifers. 4,379,717, Cl. 71-92.000.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Process for preparing arylsulfonyl isocyanates by phosgenation of arylsulfonamides. 4,379,769, Cl. 260-545.00R.

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Papadorf, John, 4,379,360, Cl. 29-11.000.

Licentia Patent-Verwaltungs-GmbH: *See*—
Lutz, Manfred; and Reimer, Bernd, 4,379,821, Cl. 430-58.000.

Lichy, Dale. Folding overhead doors. 4,379,478, Cl. 160-35.000.

Liebe, Werner; Lohmer, Karl; and Pelz, Willibald, to Agfa-Gevaert Aktiengesellschaft. Image receptor element for the dye diffusion transfer process. 4,379,828, Cl. 430-212.000.

Liertz, Heinrich, to Siemens Aktiengesellschaft. Splice connection for a pair of light waveguide cables with optical fibers in tubular sheaths. 4,379,614, Cl. 350-96.210.

Liesener, Kenneth P., to Caterpillar Tractor Co. Horsepower consumption control for variable displacement pumps. 4,379,389, Cl. 60-428.000.

Lillie, Christian: *See*—
Heider, Joachim; Austel, Volkhard; Eberlein, Wolfgang; Kadatz, Rudolf; and Lillie, Christian, 4,379,788, Cl. 424-251.000.

Lin, Shiow C., to W. R. Grace & Co. Cyanourea compounds or polymers thereof as epoxy resin curing agents. 4,379,728, Cl. 156-307.300.

Lind, Nils: *See*—
Jenkins, Allan D.; Appelen, John T.; and Lind, Nils, 4,379,371, Cl. 37-104.000.

Lindley, Donald C., to Contectrol Incorporated. Rodent trap. 4,379,374, Cl. 43-61.000.

Linvill, John G., to Stanford University. Stimulator array. 4,379,697, Cl. 434-114.000.

Lipcon, Jesse B., to Digital Equipment Corporation. Tester for collision-detect circuitry. 4,380,088, Cl. 455-67.000.

Llabres, Raymond, to Thomson-CSF. Optical disk cassette. 4,379,507, Cl. 206-444.000.

Lobach, Ernst, to Censor Patent- und Versuchs-Anstalt. Process for transferring a pattern onto a semiconductor disk. 4,379,831, Cl. 430-311.000.

LoBiondo, Vincent. Rubber band rifle. 4,379,445, Cl. 124-19.000.

Lock, William E.; and Snyder, Edward A., to Corning Glass Works. Artwork alignment for decorating machine. 4,379,818, Cl. 430-5.000.

Lockheed Corporation: *See*—
Caldwell, Edward W.; and Smethers, Rollo G., Jr., 4,379,533, Cl. 244-118.100.
Steiner, William G., 4,380,070, Cl. 371-20.000.

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Liebe, Werner; Lohmer, Karl; and Pelz, Willibald, 4,379,828, Cl. 430-212.000.

Lom, Duane L.; and Klouda, John F., to Trane Company, The. Control for a variable air volume temperature conditioning system-outdoor air economizer. 4,379,484, Cl. 165-16.000.

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Natale, Peter J.; and Lombardo, Igino, 4,379,682, Cl. 425-10.000.

Lomeli, Ronald C.; and Stewart, Gary E., to Trade Printers, Inc. Business form with removable label and method for producing the same. 4,379,573, Cl. 428-42.000.

Long, Ernest L.; Duvall, William S.; and Allen, Donald P., to Amtel Systems Corporation. Message communication system. 4,380,009, Cl. 340-825.550.

Long, Geoffrey A. D.; and McPike, Brian C., to Sewell Plastics, Inc. Method and apparatus for applying hot melt adhesive to base cups. 4,379,731, Cl. 156-356.000.

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Horowski, Reinhard; Kehr, Wolfgang; Sauer, Gerhard; Eder, Ulrich; and Lorenz, Hans P., 4,379,790, Cl. 424-261.000.

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Weber, Heinrich; Lorenz, Kurt; and Dungs, Horst, 4,379,692, Cl. 432-18.000.

Lowery, Kirby, Jr.: *See*—
Shipley, Randall S.; Lowery, Kirby, Jr.; and Gibbs, Ronald L., 4,379,760, Cl. 252-429.00B.

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Dalal, Hormazdyar M.; and Lowney, John J., 4,379,832, Cl. 430-315.000.

Lowrey, Robert D.; Nelson, Howard D.; and Van Dyke Tiers, George, to Minnesota Mining and Manufacturing Company. Black image from a thermographic imaging system. 4,379,835, Cl. 430-338.000.

Lu, Chen-i, to Eastman Kodak Company. Method of making polyester prepolymers. 4,379,912, Cl. 528-274.000.

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Andrews, Richard J., 4,379,524, Cl. 239-533.800.

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Lutz, Manfred; and Reimer, Bernd, to Licentia Patent-Verwaltungs-GmbH. Electrophotographic recording material with $As_2Se_{3-x}Te_x$ charge generating layer. 4,379,821, Cl. 430-58.000.

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Deutsch, Albert S.; Lyons, Christopher F.; and Piller, Robert, 4,379,830, Cl. 430-309.000.
M&T Chemicals Inc.: *See*—
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Allison, Robert, 4,379,663, Cl. 406-23.000.
MacBean, Donald G., to JWI Ltd. Three-layer forming fabric. 4,379,735, Cl. 162-348.000.
Mack, Mark P.; and Berge, Charles T., to Conoco Inc. Silyl esters of carboxylic acids by phase transfer catalysts. 4,379,766, Cl. 260-413.000.
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Yang, Chi C.; Madan, Arun; Ovshinsky, Stanford R.; and Adler, David, 4,379,943, Cl. 136-249.000.
Maeda, Junji: *See*—
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Maeda, Katsutoshi, to Kabushiki Kaisha Daini Seikosha. Paper feed roll rotated by print head carrier movement. 4,379,646, Cl. 400-636.000.
Maezawa, Shuji; and Murata, Masami, to Kabushiki Kaisha Suwa Seikosha. Multi-alarm electronic watch. 4,379,641, Cl. 368-74.000.
Magna, Henriette: *See*—
Lehureau, Jean-Claude; Magna, Henriette; and Thirouard, Michel, 4,380,016, Cl. 346-135.100.
Magnetic Peripherals Inc.: *See*—
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Mahan, Richard S.; Tritt, Paul G.; and Ward, James H., Jr., to B. F. Goodrich Company, The. Automatic locking and ejecting hook assembly. 4,379,579, Cl. 294-83.00R.
Maier, Richard K.: *See*—
Schuyler, Andreas D.; and Maier, Richard K., 4,379,554, Cl. 273-67.00R.
Maier, Roland; Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Lechner, Uwe; and Goeth, Hanns, to Dr. Karl Thomae Gesellschaft mit beschrankter Haftung. Pyrimidinyl ureido penicillins. 4,379,784, Cl. 424-229.000.
Makinen, Heimo, to Elevator GmbH. Method and apparatus for stopping an elevator. 4,380,049, Cl. 364-426.000.
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Debord, Pierre; and Marijon, Jean-Louis, 4,380,005, Cl. 340-347.0AD.
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Sedlmair, Gerhard, 4,379,570, Cl. 280-605.000.
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Ray, Ranjan; and Panchanathan, Viswanathan, 4,379,720, Cl. 75-251.000.
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Marquette Metal Products Co.: *See*—
Baxter, Donald J.; and Childress, Hugh L., Jr., 4,379,986, Cl. 318-434.000.
Marsh, Christopher R., to BP Chemicals Limited. Process for producing polyisobutenes. 4,379,899, Cl. 526-144.000.
Martin, Charles L., to Raychem Corporation. Composite coupling. 4,379,575, Cl. 285-369.000.
Martin, Robert P., Jr. Safety boot for punch or the like. 4,379,418, Cl. 83-544.000.
Maruyama, Takashi: *See*—
Ueno, Katsuzi; Maruyama, Takashi; Suzuki, Haruo; and Saito, Teruo, 4,379,892, Cl. 525-439.000.
Masse, Lucien; Medlin, William L.; and Sexton, James H., to Mobil Oil Corporation. System for conducting resonance measurements of rock materials under confining pressure. 4,379,407, Cl. 73-579.000.
Masugi, Takashi: *See*—
Ueda, Ikuo; Takaya, Takao; Kobayashi, Masakazu; Masugi, Takashi; Takasugi, Hisashi; Kochi, Hiromu; and Kitaguchi, Tadashi, 4,379,922, Cl. 544-16.000.
Mateika, Dieter; and Laurien, Rolf, to U.S. Philips Corporation. Magnetic device having a monocrystalline garnet substrate bearing a magnetic layer. 4,379,853, Cl. 501-135.000.
Mathias Bauerle GmbH: *See*—
Purr, Horst, 4,379,467, Cl. 134-111.000.
Matschke, Guunther: *See*—
Krafft, Werner; Helling, Gunter; Matschke, Guunther; and Boie, Immo, 4,379,829, Cl. 430-215.000.
Matschke, Klaus: *See*—
Andersen, Heinz-Erhardt; Brebels, Jack J.; Matschke, Klaus; and Scheier, Franz, 4,379,774, Cl. 264-284.000.
Matsufuji, Akihiro; Ishiguro, Tadashi; and Tsuji, Nobuo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,379,809, Cl. 428-470.000.
Matsumaru, Hiroshi: *See*—
Mori, Kinji; Ihara, Hirokazu; and Matsumaru, Hiroshi, 4,380,061, Cl. 370-16.000.
Matsumoto, Hisashi, to Mitsui Petrochemical Industries, Ltd. Reinforcing material for hydraulic substances and method for the production thereof. 4,379,870, Cl. 523-221.000.
Matsumoto, Muneaki: *See*—
Kuno, Akira; Matsumoto, Muneaki; and Numata, Koji, 4,379,366, Cl. 33-361.000.
Matsuo, Noritada: *See*—
Funaki, Yuji; Tanaka, Shizuya; and Matsuo, Noritada, 4,379,921, Cl. 542-458.000.
Matsuoka, Kazuhiko; and Minoura, Kazuo, to Canon Kabushiki Kaisha. Scanning optical system having a fall-down correcting function. 4,379,612, Cl. 350-6.800.
Matsushita Electric Industrial Company, Limited: *See*—
Funakoshi, Yasutomo; and Wakahata, Tamotsu, 4,379,617, Cl. 350-126.000.
Ikedo, Masaru; Watari, Masafumi; Yasuno, Yoshitake; and Yamashita, Tadaoki, 4,379,621, Cl. 350-392.000.
Kanazawa, Takato; Mori, Keijiro; Kusunoki, Shigeru; Nishii, Kazunari; and Nobue, Tomotaka, 4,379,964, Cl. 219-492.000.
Matsuyama, Mitsuo; Ohhinata, Ichiro; and Kitano, Junjiro, to Hitachi, Ltd. Semiconductor integrated circuit. 4,380,021, Cl. 357-15.000.
Mattatall, Patricio. Molded hearing aid and battery charger. 4,379,988, Cl. 320-4.000.
Mattison, Ronald P.: *See*—
Danielson, Paul S.; Mattison, Ronald P.; and Werner, Albert J., 4,379,851, Cl. 501-66.000.
Mauersberger, Reinhard: *See*—
Schoening, Josef; Schwiers, Hans-Georg; Elter, Claus; Stracke, Wilfried; and Mauersberger, Reinhard, 4,380,085, Cl. 376-381.000.
Mayer, Bruno: *See*—
Buchmann, Heinz; Mayer, Bruno; and Szybowicz, Wolfgang, 4,379,652, Cl. 404-117.000.
McColl, James R., to GTE Laboratories Incorporated. Automatic aperture size measurement apparatus and process. 4,379,635, Cl. 356-387.000.
McDonnell Douglas Corporation: *See*—
Allen, Louis B., Jr.; and Koenig, Herbert G., Jr., 4,380,075, Cl. 372-44.000.
Baldwin, Floyd G.; and Evans, Donald E., 4,379,535, Cl. 244-137.00R.
Palmer, Raymond J.; and Micheaux, Dominique, 4,379,798, Cl. 428-113.000.
McGuiness, Robert C.: *See*—
Falkenburg, Hans R.; Krause, Siegfried; and McGuiness, Robert C., 4,379,909, Cl. 528-94.000.
McGuire, John L.: *See*—
Capetola, Robert J.; and McGuire, John L., 4,379,789, Cl. 424-260.000.
McIntosh, Thomas K., to Bloomfield Manufacturing Co., Inc. Lifting jack. 4,379,546, Cl. 254-111.000.
McIntyre, John A. Fiber optic matrix coding method and apparatus for radiation image amplifier. 4,379,967, Cl. 250-227.000.
McLaughlin, Joseph E.; and Strickland, George A., to Du Pont de Nemours, E. I., and Company. Liquid coating composition having a reactive catalyst. 4,379,886, Cl. 525-162.000.
McLaughlin, Michael J.: *See*—
Chen, Yeunung; and McLaughlin, Michael J., 4,379,949, Cl. 179-15.55R.
McMahan, Norman C. Auditorium convertible floor. 4,379,378, Cl. 52-9.000.
McMahan, William H., to American Laser Corporation. Segmented ceramic bore laser. 4,380,077, Cl. 372-62.000.
McNeely, Michael L.: *See*—
Chambers, Robert W.; McNeely, Michael L.; and Torrington, Leslie A., 4,379,686, Cl. 425-290.000.
McNeilab, Inc.: *See*—
Rasmussen, Chris R., 4,379,786, Cl. 424-244.000.
McPike, Brian C.: *See*—
Long, Geoffrey A. D.; and McPike, Brian C., 4,379,731, Cl. 156-356.000.
Mead Corporation, The: *See*—
Clement, Joseph J., 4,379,431, Cl. 108-111.000.
Cole, John N.; and Hettel, David A., 4,379,808, Cl. 428-438.000.
Mearig, Stephen G., to Armstrong World Industries, Inc. Method to make a built up area rotary printing screen. 4,379,737, Cl. 204-11.000.
Medlin, William L.: *See*—
Masse, Lucien; Medlin, William L.; and Sexton, James H., 4,379,407, Cl. 73-579.000.
Medtronic, Inc.: *See*—
Stein, Marc T., 4,379,459, Cl. 128-419.0PG.
Meier, Robert H.; and Farr, Evelyn, to Camp International, Inc. Multicentric knee cage. 4,379,463, Cl. 128-80.00C.
Meisel, Thomas C., Jr.; and Price, Robert J., to Caterpillar Tractor Co. Load skidding vehicle having a positionally biased grapple. 4,379,674, Cl. 414-699.000.
Melvin, Lawrence S., Jr.; and Johnson, Michael R., to Pfizer Inc. Trialkylsilicon-containing phenylcycloalkane analgesics. 4,379,783, Cl. 424-184.000.
Mercer, Elizabeth A.: *See*—
Eisele, John F.; and Mercer, Elizabeth A., 4,379,804, Cl. 428-332.000.
Merck & Co., Inc.: *See*—
Blaine, Edward H., 4,379,792, Cl. 424-270.000.
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,379,791, Cl. 424-270.000.

Merrill, Duane F., to General Electric. Process for producing a low viscosity silicone resin. 4,379,902, Cl. 528-18.000.
Meyrat, Clement, to Ebauches, S.A. Apparatus for the selection or correction of data in an electronic watch. 4,379,642, Cl. 368-188.000.
Miall, David E.: *See*—
French, Gordon B.; Mills, Eugene A.; and Miall, David E., 4,379,590, Cl. 299-2.000.
Micheaux, Dominique: *See*—
Palmer, Raymond J.; and Micheaux, Dominique, 4,379,798, Cl. 428-113.000.
Mickelson, Dan: *See*—
Wilson, Robert E.; and Mickelson, Dan, 4,379,687, Cl. 425-388.000.
Middel, Jan; and Gorter, Cornelis A., to Estel Hoogovens B.V. Apparatus for applying marks to a product e.g. a coil of rolled steel. 4,379,427, Cl. 101-35.000.
Miho, Takuya: *See*—
Watanabe, Shoji; Miho, Takuya; and Fujii, Tatsumi, 4,379,915, Cl. 528-357.000.
Miller, Daniel R.; Deaton, Thomas; and Royer, Robert, to Nestier Corporation. Nesting tray with stacking keyed interlock. 4,379,508, Cl. 206-507.000.
Miller, John D.; and Grunewalder, Valentine J., to PPG Industries, Inc. Fluorocarbon coating compositions. 4,379,885, Cl. 525-108.000.
Miller, Ralph A.; and White, Randall F., to United States of America, Navy. Cargo lift system. 4,379,534, Cl. 244-137.00R.
Miller, Samuel A.; and Jeffris, Larry L., to United States of America, Navy. Laser beam steering device. 4,379,624, Cl. 350-486.000.
Mills, Eugene A.: *See*—
French, Gordon B.; Mills, Eugene A.; and Miall, David E., 4,379,590, Cl. 299-2.000.
Mills, Thomas G.: *See*—
Yuan, Lloyd T.; Chang, Yu-Wen; and Mills, Thomas G., 4,380,020, Cl. 357-3.000.
Mimamida, Isao: *See*—
Numata, Mitsuo; Mimamida, Isao; Yamaoka, Masayoshi; Shiraishi, Mitsura; and Miyawaki, Toshio, 4,379,924, Cl. 544-27.000.
Mimoun, Hubert; Charpentier, Robert; and Roussel, Michel, to Institut Francais du Petrole. Process for manufacturing methyl ketones by oxidation of terminal olefins. 4,379,942, Cl. 568-385.000.
Minamitani, Eiji: *See*—
Ishikawa, Hiroshi; Kojima, Takuhito; and Minamitani, Eiji, 4,380,064, Cl. 370-63.000.
Minnesota Mining and Manufacturing Company: *See*—
Clemens, Lawrence M.; and Gasper, Alton J., 4,379,763, Cl. 252-628.000.
Collins, Stanley B., 4,379,824, Cl. 430-106.600.
Eisele, John F.; and Mercer, Elizabeth A., 4,379,804, Cl. 428-332.000.
Lowrey, Robert D.; Nelson, Howard D.; and Van Dyke Tiers, George, 4,379,835, Cl. 430-338.000.
Minoura, Kazuo: *See*—
Matsuoka, Kazuhiko; and Minoura, Kazuo, 4,379,612, Cl. 350-6.800.
Mir, Jose M.; Varner, Jerry R.; and Kurtz, Clark N., to Eastman Kodak Company. Electronic imaging apparatus with light valve area arrays. 4,380,023, Cl. 358-75.000.
Miracle Recreation Equipment Company: *See*—
Ahrens, Paul W., 4,379,551, Cl. 272-56.50R.
Mishakov, Vladimir N.: *See*—
Vakhnin, Gennady I.; Verty, Vladimir G.; Voronin, Pavel G.; Gurov, Evgeny I.; Isaikin, Vladimir G.; Mishakov, Vladimir N.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Tabakov, Vladimir P.; Tjunkin, Boris A.; and Fotieva, Ljudmila I., 4,379,592, Cl. 299-2.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Ishii, Toshiaki, 4,380,045, Cl. 363-54.000.
Ito, Osamu; and Watanabe, Isao, 4,380,015, Cl. 346-108.000.
Iwaki, Yoshiyuki; and Goto, Hitoshi, 4,380,003, Cl. 338-315.000.
Kimura, Minoru; and Ina, Teruo, 4,379,999, Cl. 336-84.00C.
Mitsui Petrochemical Industries, Ltd.: *See*—
Matsumoto, Hisashi, 4,379,870, Cl. 523-221.000.
Mitsui Toatsu Chemicals, Inc.: *See*—
Asano, Makoto; Tanabe, Yoshimitu; and Murakami, Hisamichi, 4,379,897, Cl. 525-506.000.
Mitushashi, Yasuo, to Canon Kabushiki Kaisha. Porous electrophotographic toner and preparation process of making. 4,379,825, Cl. 430-111.000.
Miwa, Tsutomu. Device for improving aerodynamic and safety characteristics of automotive vehicles. 4,379,582, Cl. 296-1.00S.
Miyakawa, Seii; Ikeda, Manabu; Hashizume, Shin; and Iijima, Kazunori, to Hitachi, Ltd. Magnetic tape running system. 4,379,517, Cl. 226-189.000.
Miyamoto, Chikara: *See*—
Fujiwara, Akiko; Miyamoto, Chikara; and Okuda, Toru, 4,379,842, Cl. 435-58.000.
Miyamura, Kou: *See*—
Suzuki, Hiroo; Yamamoto, Koichi; Ohno, Yasuhide; and Miyamura, Kou, 4,379,482, Cl. 164-485.000.
Miyata, Shigeo, to Kyowa Chemical Industry Co., Ltd. Halogen-containing polyolefin composition, and method for inactivating halogens therein. 4,379,882, Cl. 524-436.000.
Miyawaki, Toshio: *See*—
Numata, Mitsuo; Mimamida, Isao; Yamaoka, Masayoshi; Shiraishi, Mitsura; and Miyawaki, Toshio, 4,379,924, Cl. 544-27.000.
Mizell, Emerson H.: *See*—
Holcombe, J. L., 4,379,381, Cl. 52-404.000.
Mizell, James A., to California Fin Systems. Apparatus for securing fins to a surfboard. 4,379,703, Cl. 441-79.000.
Mizuguchi, Ryuzo: *See*—
Ishikura, Shin-Ichi; Kanda, Kazunori; and Mizuguchi, Ryuzo, 4,379,872, Cl. 523-406.000.
Mizuma, Kenichi, to Ricoh Company, Ltd. Sheet paper stacking apparatus. 4,379,549, Cl. 271-3.100.
Mizuno, Toshiro; and Imai, Kazuo, to Nippon Telegraph & Telephone Public Corporation. Signalling system and signal control equipment for multi-address calling. 4,379,946, Cl. 178-3.000.
Mizuno, Yoshiro; and Kitamura, Akihiko, to Kojima Puresu Kogyo Kabushiki Kaisha. Means for retaining a rod-shaped material. 4,379,536, Cl. 248-73.000.
Mizuta, Yukio: *See*—
Iwata, Masayosi; Douke, Harumi; Hayashi, Yoshikazu; Yokoyama, Tadashi; and Mizuta, Yukio, 4,379,954, Cl. 200-4.000.
Mobil Oil Corporation: *See*—
Masse, Lacien; Medlin, William L.; and Sexton, James H., 4,379,407, Cl. 73-579.000.
Olson, David H.; and Rodewald, Paul G., 4,379,761, Cl. 252-435.000.
Rollmann, Louis D., 4,379,489, Cl. 166-266.000.
Ruehle, William H., 4,380,059, Cl. 367-46.000.
Yan, Tsoung Y., 4,379,747, Cl. 208-251.00H.
Mochizuki, Teruji: *See*—
Ooishi, Minoru; Mochizuki, Teruji; and Suzuki, Yutaka, 4,379,997, Cl. 330-298.000.
Moehlenpah Industries, Inc.: *See*—
Thompson, James L.; and Hornkohl, Owen T., 4,379,426, Cl. 100-100.000.
Moll, Franz: *See*—
Lapp, Otto; von Rintelen, Harald; Moll, Franz; and Endres, Lothar, 4,379,837, Cl. 430-434.000.
Mono Pumps Limited: *See*—
Nelson, Hugh D., 4,379,561, Cl. 277-237.00R.
Monsanto Company: *See*—
Schafer, David E.; and Czajkowski, Albert J., 4,379,716, Cl. 71-87.000.
Moore, Damon E.: *See*—
Wiggins, John W.; and Moore, Damon E., 4,379,449, Cl. 126-449.000.
Moore, John A.: *See*—
Dounce, George H.; and Moore, John A., 4,379,965, Cl. 219-521.000.
Moore, Perry H., Jr.: *See*—
Rao, Pemmaraju N.; Purdy, Robert H.; and Moore, Perry H., Jr., 4,379,779, Cl. 436-543.000.
Mora, Paolo C.: *See*—
Paracchini, Silvano; and Mora, Paolo C., 4,379,935, Cl. 546-51.000.
Mora, Paolo Corvi: *See*—
Paracchini, Silvano; and Mora, Paolo C., 4,379,935, Cl. 546-51.000.
Morck, Charles W., Jr., to Selas Corporation of America. Dual fuel burner. 4,379,689, Cl. 431-284.000.
Morgan, Robert L.: *See*—
Webb, Ronald W.; and Morgan, Robert L., 4,379,552, Cl. 272-67.000.
Mori, Keijiro: *See*—
Kanazawa, Takato; Mori, Keijiro; Kusunoki, Shigeru; Nishii, Kazunari; and Nobue, Tomotaka, 4,379,964, Cl. 219-492.000.
Mori, Kinji; Ihara, Hirokazu; and Matsumaru, Hiroshi, to Hitachi, Ltd. Loop transmission system with improved bypass routing arrangement. 4,380,061, Cl. 370-16.000.
Morimoto, Shoji: *See*—
Ohmi, Hidehiko; Kitagawa, Katsuhisa; Morimoto, Shoji; Kubo, Tateo; Ohno, Misao; and Takahashi, Seitaro, 4,379,512, Cl. 215-327.000.
Morishita, Yutaka: *See*—
Tada, Tetsuya; and Morishita, Yutaka, 4,379,685, Cl. 425-183.000.
Moriya, Mitsumasa: *See*—
Yoritomi, Kenzaburo; Kezuka, Teruo; and Moriya, Mitsumasa, 4,379,751, Cl. 210-659.000.
Morooka, Yasuo: *See*—
Konishi, Seizi; Tashiro, Kazuyuki; Kamigane, Yoshihiro; Sakurai, Takakazu; Tanifuji, Shinya; and Morooka, Yasuo, 4,379,395, Cl. 72-8.000.
Mortonson, Robert W.: *See*—
Sievers, Kirk A.; and Mortonson, Robert W., 4,379,990, Cl. 322-99.000.
Mostek Corporation: *See*—
Larson, David N., 4,380,055, Cl. 365-154.000.
Plachno, Robert S., 4,379,974, Cl. 307-269.000.
Motko, Richard L.: *See*—
Hansen, Douglas E.; Johnson, Steven D.; and Motko, Richard L., 4,379,857, Cl. 521-54.000.
Motor Panels (Coventry) Limited: *See*—
Taylor, Merrick W.; Allen, George R.; and Strong, Terence, 4,379,583, Cl. 296-1.00S.
Motorola, Inc.: *See*—
Chen, Yeunung; and McLaughlin, Michael J., 4,379,949, Cl. 179-15.55R.
Fette, Bruce A., 4,380,051, Cl. 364-766.000.
Ho, Roland K., 4,380,041, Cl. 361-283.000.
Sievers, Kirk A.; and Mortonson, Robert W., 4,379,990, Cl. 322-99.000.

Weber, Howard, 4,379,444, Cl. 123-609.000.

Mueller, Otto, to Staeubli Ltd. Heddle frame actuating mechanism located between a dobby and the heddle frames of a weaving machine. 4,379,474, Cl. 139-21.000.

Mueller-Westerhoff, Ulrich T.: *See*—
Nazzal, Adel I.; and Mueller-Westerhoff, Ulrich T., 4,379,740, Cl. 204-129.000.

Muller, Armin, to FAG Kugelfischer Georg Schafer & Co. Journal bearing with dust seal. 4,379,600, Cl. 308-187.100.

Muller, Hanns P.: *See*—
Stemmler, Ingo; Muller, Hanns P.; and Wagner, Kuno, 4,379,905, Cl. 528-73.000.

Muller, Hans R.: *See*—
Janson, Philippe A.; Muller, Hans R.; and Rothauser, Ernst H., 4,380,063, Cl. 370-60.000.

Muller, Rolf, to Papst-Motoren GmbH & Co. KG. Brushless DC motor driven by complementary type transistors. 4,379,984, Cl. 318-254.000.

Mullersman, Ferdinand H.; and Blake, Charles R., to General Electric Company. Indicator of full charge for secondary cell or battery thereof. 4,379,816, Cl. 429-91.000.

Multi Mineral Corporation: *See*—
Weichman, Bernard E., 4,379,593, Cl. 299-2.000.

Multikunst Legepladser I/S: *See*—
Petersen, Tom L., 4,379,550, Cl. 272-52.000.

Munch, Walter; and Uetrecht, Dale M., to Baldwin Piano & Organ Company. Polyphonic electronic music system. 4,379,422, Cl. 84-1.190.

Munekata, Seiji: *See*—
Yamabe, Masaaki; Munekata, Seiji; Kumai, Seisaku; and Kaneko, Isamu, 4,379,768, Cl. 260-544.00F.

Munny, Gunter. Prosthetic joint for knee and above-knee amputees. 4,379,350, Cl. 3-22.000.

Muntjanoff, John R.; and Day, Dennis M., to Caterpillar Tractor Co. Dampened fully pivotal hanger for a grapple. 4,379,675, Cl. 414-734.000.

Murakami, Hisamichi: *See*—
Asano, Makoto; Tanabe, Yoshimitu; and Murakami, Hisamichi, 4,379,897, Cl. 525-506.000.

Murata, Masami: *See*—
Maezawa, Shuji; and Murata, Masami, 4,379,641, Cl. 368-74.000.

Nabisco Brands, Inc.: *See*—
Ripka, Michael S., 4,379,845, Cl. 435-255.000.

Nael, Albert, to Compagnie Generale d'Automatisme CGA Alcatel. Tray for storing and classifying slides and a viewer for slides disposed in such trays. 4,379,627, Cl. 353-27.00A.

Nagae, Yoshiharu: *See*—
Kawakami, Hideaki; Kitazima, Masaaki; Izaki, Naoyuki; and Nagae, Yoshiharu, 4,380,008, Cl. 340-784.000.

Nagashima, Masaya. Method for releasably rigidly fastening two intersected overlapping metal profiles and means therefor. 4,379,651, Cl. 403-387.000.

Nakamura, Hitoshi; Nishizima, Hideyo; Ema, Hideaki; Harigaya, Makoto; and Otomura, Satoshi, to Ricoh Company, Ltd. Electrophotographic photoconductor of halogen-doped Se-Te alloy layers. 4,379,820, Cl. 430-58.000.

Nakao, Makoto: *See*—
Takamatsu, Mashiro; Nakao, Makoto; and Ogawa, Isao, 4,380,043, Cl. 362-26.000.

Nakatsukasa, Masashi; and Takahashi, Nobuyuki, to Anelva Corporation. Sputtering apparatus comprising control means for preventing impurity gases from entering a sputtering chamber. 4,379,743, Cl. 204-298.000.

Namiki, Junji, to Nippon Electric Co., Ltd. Digital signal receiver with FM interference elimination capability. 4,380,082, Cl. 375-102.000.

Natale, Peter J.; and Lombardo, Igino, to Ortho Diagnostics, Inc. Reaction apparatus for the formation of microspheres or microcapsules. 4,379,682, Cl. 425-10.000.

National Can Corporation: *See*—
Cochran, Donald D., 4,379,671, Cl. 414-331.000.

National Starch and Chemical Corporation: *See*—
Tessler, Martin M.; Wurzburg, Otto B.; and Dirscherl, Teresa A., 4,379,919, Cl. 536-108.000.

Nazzal, Adel I.; and Mueller-Westerhoff, Ulrich T., to International Business Machines Corporation. Photoassisted generation of hydrogen from water. 4,379,740, Cl. 204-129.000.

NcNeil Corporation: *See*—
Rademacher, Thomas P., 4,379,704, Cl. 441-88.000.

Neidhardt, Rudolf: *See*—
Gubbe, Bernd; Krause, Klaus-Dieter; Neidhardt, Rudolf; and Schonemann, Otto, 4,379,429, Cl. 108-5.000.

Neill, Daniel L.; and Weiner, Paul, to Kelsey-Hayes Co. Secondary brake pedal assembly. 4,380,002, Cl. 338-153.000.

Nelson, Edward I.: *See*—
Ely, Richard I.; and Nelson, Edward I., 4,379,968, Cl. 250-229.000.

Nelson, Eileen M. Method of and means for improved reading efficiency of persons with specific dyslexia. 4,379,699, Cl. 434-184.000.

Nelson, Howard D.: *See*—
Lowrey, Robert D.; Nelson, Howard D.; and Van Dyke Tiers, George, 4,379,835, Cl. 430-338.000.

Nelson, Hugh D., to Mono Pumps Limited. Well packer. 4,379,561, Cl. 277-237.00R.

Neodontics, Inc.: *See*—
Riess, Guido, 4,379,694, Cl. 433-201.000.

Nesterov, Boris F.: *See*—
Shkidchenko, Alexandr N.; Nesterov, Boris F.; Sharov, Vyacheslav G.; and Smolin, Boris I., 4,379,846, Cl. 435-316.000.

Nestier Corporation: *See*—
Miller, Daniel R.; Deaton, Thomas; and Royer, Robert, 4,379,508, Cl. 206-507.000.

Neuromed, Inc.: *See*—
Borkan, William N.; Savino, Frank M.; and Waltz, Joseph M., 4,379,462, Cl. 128-786.000.

Newby, Kenneth R.: *See*—
Tsien, Hsue C.; Newby, Kenneth R.; Grimes, Patrick G.; and Bellows, Richard J., 4,379,814, Cl. 429-42.000.

Newell Research Corporation: *See*—
Pfost, R. Fred, 4,380,032, Cl. 360-74.600.

Newnham, John H. Propellers and windmills. 4,379,813, Cl. 428-587.000.

Ney, Hermann; and Kuhn, Michael H., to U.S. Philips Corporation. Method of and arrangement for deriving characteristic values from a sound signal. 4,379,948, Cl. 179-1.0SC.

Nicolaisen, Holger, to Danfoss A/S. Coil arrangement, particularly for relays, and method of making same. 4,380,000, Cl. 336-192.000.

Nielsen, Hans B. Tube for yarn bobbin. 4,379,529, Cl. 242-118.110.

Nifco Inc.: *See*—
Tanaka, Shinken; and Yuda, Takuo, 4,379,648, Cl. 403-24.000.

Nihon Surfactant Industry Co., Ltd.: *See*—
Yamada, Mikio; and Tabata, Yujin, 4,379,755, Cl. 252-312.000.

Nilsson, Erling S.; and Zetterquist, Staffan G. Thermographic apparatus. 4,379,461, Cl. 128-736.000.

Nippon Electric Co., Ltd.: *See*—
Namiki, Junji, 4,380,082, Cl. 375-102.000.

Nippon Kogaku K.K.: *See*—
Daitoku, Koichi, 4,379,629, Cl. 354-173.000.

Nippon Paint Co., Ltd.: *See*—
Ishikura, Shin-Ichi; Kanda, Kazunori; and Mizuguchi, Ryuzo, 4,379,872, Cl. 523-406.000.

Nippon Pneumatic Manufacturing Co., Ltd.: *See*—
Hiraoka, Masaaki, 4,379,492, Cl. 173-12.000.

Nippon Soken, Inc.: *See*—
Hattori, Tadashi; Yamaguchi, Hiroaki; and Ootsuka, Yoshinori, 4,379,403, Cl. 73-35.000.
Kuno, Akira; Matsumoto, Muneaki; and Numata, Koji, 4,379,366, Cl. 33-361.000.

Nippon Steel Corporation: *See*—
Shimbashi, Ichiro; Ikegami, Hiroshi; and Bando, Hideharu, 4,379,547, Cl. 266-103.000.
Suzuki, Hiroo; Yamamoto, Koichi; Ohno, Yasuhide; and Miyamura, Kou, 4,379,482, Cl. 164-485.000.

Nippon Telegraph & Telephone Public Corporation: *See*—
Mizuno, Toshiro; and Imai, Kazuo, 4,379,946, Cl. 178-3.000.

Nippondenso Co., Ltd.: *See*—
Sano, Hiromi; and Suzuki, Masatoshi, 4,379,741, Cl. 204-424.000.

Nisbet, Louis J.: *See*—
Brown, David; Giles, Anthony F.; Cramer, Howard W.; Noble, H. Mary; Nisbet, Louis J.; Bushell, Michael E.; Weare, Glenis; and Caldwell, Ian Y., 4,379,920, Cl. 542-427.000.

Nishii, Kazunari: *See*—
Kanazawa, Takato; Mori, Keijiro; Kusunoki, Shigeru; Nishii, Kazunari; and Nobue, Tomotaka, 4,379,964, Cl. 219-492.000.

Nishikawa, Kazuyuki; and Hirao, Katsumi, to Daicel Chemical Industries, Ltd.; and Shinto Kogio, Ltd. Binder for casting sand and resin-coated grains of sand. 4,379,865, Cl. 523-139.000.

Nishikawa, Masao, to Takatori Machinery Works Ltd. Method and apparatus for automatically packaging stockings. 4,379,384, Cl. 53-415.000.

Nishizima, Hideyo: *See*—
Nakamura, Hitoshi; Nishizima, Hideyo; Ema, Hideaki; Harigaya, Makoto; and Otomura, Satoshi, 4,379,820, Cl. 430-58.000.

Nissan Motor Company, Limited: *See*—
Anzai, Makoto, 4,379,441, Cl. 123-440.000.
Hagiwara, Yutaka; Takada, Toshiaki; and Yamazaki, Tetu, 4,379,501, Cl. 188-218.0XL.
Iizuka, Haruhiko; and Sugasawa, Fukashi, 4,379,387, Cl. 60-277.000.
Kamino, Kyoichi, 4,379,500, Cl. 188-196.00B.
Kishi, Norimasa; and Suzuki, Tadashi, 4,380,048, Cl. 364-424.100.
Tanaka, Shinken; and Yuda, Takuo, 4,379,648, Cl. 403-24.000.

Noble, H. Mary: *See*—
Brown, David; Giles, Anthony F.; Cramer, Howard W.; Noble, H. Mary; Nisbet, Louis J.; Bushell, Michael E.; Weare, Glenis; and Caldwell, Ian Y., 4,379,920, Cl. 542-427.000.

Noble, Wendell P., Jr.: *See*—
Kotecha, Harish N.; Noble, Wendell P., Jr.; and Wiedman, Francis W., III, 4,380,057, Cl. 365-185.000.

Nobue, Tomotaka: *See*—
Kanazawa, Takato; Mori, Keijiro; Kusunoki, Shigeru; Nishii, Kazunari; and Nobue, Tomotaka, 4,379,964, Cl. 219-492.000.

Noiles, Douglas G.: *See*—
Gravener, Roy D.; De Carlo, Alfred F.; and Noiles, Douglas G., 4,379,457, Cl. 128-334.00R.

Nokes, Ronald W. Wedging apparatus useful for log splitting. 4,379,475, Cl. 144-193.00C.

Nordica S.p.A.: *See*—
Balbinot, Renzo, 4,379,370, Cl. 36-121.000.

Noriaki, Tsunoda. Writing medium for ball point writing instrument. 4,379,867, Cl. 523-161.000.

Norman, Oscar L.; and Handler, Laurence H., to Sun-Ohio, Inc. Method of destruction of polychlorinated biphenyls. 4,379,746, Cl. 208-262.000.

Norman, Oscar L., to Sun-Ohio, Inc. Method for destruction of polyhalogenated biphenyls. 4,379,752, Cl. 210-712.000.

North American Philips Corporation: *See*—
Goldowsky, Michael P., 4,379,598, Cl. 308-10.000.
Juner, Adolph; Haas, David J.; and Rudd, Chester D., 4,379,481, Cl. 160-310.000.

Northern Telecom Limited: *See*—
Walling, Jong-Hein; Arbuthnot, Gerald R.; and Gervais, Michel, 4,379,435, Cl. 118-643.000.

Nosaka, Kenkichi: *See*—
Takahashi, Sadayuki; Komeda, Yorio; Tachibana, Matsuo; and Nosaka, Kenkichi, 4,379,673, Cl. 414-686.000.

Nowak, Frederick H., to Otis Elevator Company. Emergency power elevator recovery and service system. 4,379,499, Cl. 187-29.00R.

Nowicki, Casimir W.; and Jaffee, Alan M., to Owens-Illinois, Inc. Process for recycling plastic container scrap. 4,379,525, Cl. 241-20.000.

Noyori, Tatsuhiko: *See*—
Asari, Akira; Noyori, Tatsuhiko; and Takehata, Tetsuro, 4,379,398, Cl. 72-273.500.

Numata, Koji: *See*—
Kuno, Akira; Matsumoto, Muneaki; and Numata, Koji, 4,379,366, Cl. 33-361.000.

Numata, Mitsuo; Mimamida, Isao; Yamaoka, Masayoshi; Shiraishi, Mitsura; and Miyawaki, Toshio, to Takeda Chemical Industries, Ltd. Cephalosporin derivatives. 4,379,924, Cl. 544-27.000.

Nunan, Kevin N. G. Electrical pickups. 4,379,421, Cl. 84-1.150.

Oak Industries, Inc.: *See*—
Comerford, John, 4,379,955, Cl. 200-11.0DA.

Obrezkov, Alexandr I.: *See*—
Vakhnin, Gennady I.; Verty, Vladimir G.; Voronin, Pavel G.; Gurov, Evgeny I.; Isaikin, Vladimir G.; Mishakov, Vladimir N.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Tabakov, Vladimir P.; Tjunkin, Boris A.; and Fotieva, Ljudmila I., 4,379,592, Cl. 299-2.000.

Occidental Chemical Corporation: *See*—
Schall, William L., 4,379,880, Cl. 524-297.000.

Occidental Oil Shale, Inc.: *See*—
French, Gordon B.; Mills, Eugene A.; and Miall, David E., 4,379,590, Cl. 299-2.000.
Tassoney, Joseph P., 4,379,591, Cl. 299-2.000.

Occidental Research Corporation: *See*—
Beer, Gary L.; and Chemtob, Elic, 4,379,776, Cl. 423-321.00R.

Odaka, Kentarou, to Sony Corporation. Method and apparatus for preventing errors in PCM signal processing apparatus. 4,380,071, Cl. 371-40.000.

Oertel, Richard W., III: *See*—
Ehrlich, Benjamin S.; and Oertel, Richard W., III, 4,379,904, Cl. 528-65.000.

Ogawa, Isao: *See*—
Takamatsu, Mashiro; Nakao, Makoto; and Ogawa, Isao, 4,380,043, Cl. 362-26.000.

Ohhinata, Ichiro: *See*—
Matsuyama, Mitsuo; Ohhinata, Ichiro; and Kitano, Junjiro, 4,380,021, Cl. 357-15.000.

Ohlschlager, Hans: *See*—
Helling, Gunter; Ohlschlager, Hans; Himmelmann, Wolfgang; and Beck, Manfred, 4,379,838, Cl. 430-518.000.

Ohmi, Hidehiko; Kitagawa, Katsuhisa; Morimoto, Shoji; Kubo, Tateo; Ohno, Misao; and Takahashi, Seitaro, to Toyo Seikan Kaisha, Ltd. Closure having an improved liner. 4,379,512, Cl. 215-327.000.

Ohno, Misao: *See*—
Ohmi, Hidehiko; Kitagawa, Katsuhisa; Morimoto, Shoji; Kubo, Tateo; Ohno, Misao; and Takahashi, Seitaro, 4,379,512, Cl. 215-327.000.

Ohno, Yasuhide: *See*—
Suzuki, Hiroo; Yamamoto, Koichi; Ohno, Yasuhide; and Miyamura, Kou, 4,379,482, Cl. 164-485.000.

Oizumi, Kyohei: *See*—
Ashitaka, Hidetomo; Oizumi, Kyohei; Jinda, Kazuya; and Inaishi, Kazutoshi, 4,379,889, Cl. 525-247.000.

Okada, Yasunori; and Kasai, Shozo, to Hitachi Chemical Co., Ltd. Heat resistant resin composition and insulating wire using the same which is a composition of an active hydrogen compound and the reaction product of a polyvalent isocyanate and a polyvalent carboxylic acid anhydride in an organic solvent. 4,379,879, Cl. 524-186.000.

Okamura Corporation: *See*—
Iemura, Takusuke; Goto, Takeshi; and Komaki, Hiroshi, 4,379,602, Cl. 312-268.000.

Okuda, Toru: *See*—
Fujiwara, Akiko; Miyamoto, Chikara; and Okuda, Toru, 4,379,842, Cl. 435-58.000.

Olofsson, Hasse E. O. Airborne vehicle referenced (outside world) recording device utilizing an electro-optical camera and an electronic alignment procedure. 4,380,024, Cl. 358-93.000.

Olson, David H.; and Rodewald, Paul G., to Mobil Oil Corporation. Catalyst and process for making said catalyst. 4,379,761, Cl. 252-435.000.

Olsson, Billy E.; and Kam, Lit-Yan, to AMP Incorporated. Flat cable to planar circuit connector. 4,379,608, Cl. 339-75.0MP.

Olympus Optical Company Limited: *See*—
Suzuki, Yoshiro, 4,379,630, Cl. 355-3.0TR.

O'Malley, Mary A.; and Drake, Nancy J., to Diamond Shamrock Corporation. Surface-treated soft contact lenses. 4,379,893, Cl. 525-386.000.

Ong, Helen H.; and Profitt, James A., to American Hoechst Corporation. Process for preparing spiro[indoline-3,4'-piperidine]s. 4,379,932, Cl. 546-17.000.

Ong, Helen H.; and Profitt, James A., to American Hoechst Corporation. Process for preparing spiro[indoline-3,4'-piperidine]s. 4,379,933, Cl. 546-17.000.

Ooishi, Minoru; Mochizuki, Teruji; and Suzuki, Yutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Power amplifier. 4,379,997, Cl. 330-298.000.

Ootsuka, Yoshinori: *See*—
Hattori, Tadashi; Yamaguchi, Hiroaki; and Ootsuka, Yoshinori, 4,379,403, Cl. 73-35.000.

Orlowski, Jan A.; Butler, David V.; and Kidd, Patrick D., to Scientific Pharmaceuticals, Inc. Dental material comprising dimethyacrylate adducts of glycidyl methacrylate with diesters of bis(hydroxymethyl) tricyclo[5.2.1.0^{2,6}]decane and dicarboxylic acids. 4,379,695, Cl. 433-217.000.

Ort, Donald L., to Xerox Corporation. Method for ink jet printing. 4,380,017, Cl. 346-140.00R.

Ortho Diagnostics, Inc.: *See*—
Natale, Peter J.; and Lombardo, Igino, 4,379,682, Cl. 425-10.000.

Ortho Pharmaceutical Corporation: *See*—
Capetola, Robert J.; and McGuire, John L., 4,379,789, Cl. 424-260.000.

Ota, Hiroshi; Horigome, Eiji; and Azegami, Hitoshi, to TDK Electronics Co., Ltd. Magnetic tape cassette. 4,380,035, Cl. 360-130.330.

Otis Elevator Company: *See*—
Nowak, Frederick H., 4,379,499, Cl. 187-29.00R.

Otis Engineering Corporation: *See*—
Hamm, Eddie J., 4,379,488, Cl. 166-217.000.

Otis, Harold R.; and Blake, Charles E., to Rea Magnet Wire Co., Inc. Magnet wire for hermetic motors. 4,379,807, Cl. 428-383.000.

Otomura, Satoshi: *See*—
Nakamura, Hitoshi; Nishizima, Hideyo; Ema, Hideaki; Harigaya, Makoto; and Otomura, Satoshi, 4,379,820, Cl. 430-58.000.

Otsuka, Nobuyuki; and Hirai, Seiichi, to Honda Giken Kogyo Kabushiki Kaisha. Slidable-type constant velocity universal joint. 4,379,706, Cl. 464-111.000.

Otto, Ronald F.: *See*—
Kempel, John J.; and Otto, Ronald F., 4,379,480, Cl. 160-232.000.

Overbergh, Noel M. M., to Raychem Corporation. Adhesive composition. 4,379,887, Cl. 525-184.000.

Ovshinsky, Stanford R.: *See*—
Yang, Chi C.; Madan, Arun; Ovshinsky, Stanford R.; and Adler, David, 4,379,943, Cl. 136-249.000.

Owens-Corning Fiberglas Corporation: *See*—
Eisenberg, Arnold J., 4,379,713, Cl. 65-1.000.

Owens-Illinois, Inc.: *See*—
Nowicki, Casimir W.; and Jaffee, Alan M., 4,379,525, Cl. 241-20.000.
Perry, Jack I., 4,379,581, Cl. 294-115.000.
Taylor, Edwin C., Sr., 4,379,518, Cl. 229-15.000.

Paget, Jean: *See*—
Godat, Jean; and Paget, Jean, 4,379,496, Cl. 177-25.000.

Palmer, Raymond J.; and Micheaux, Dominique, to McDonnell Douglas Corporation; and Brochier & Fils. Integral woven reinforcement for structural components. 4,379,798, Cl. 428-113.000.

Panchanathan, Viswanathan: *See*—
Ray, Ranjan; and Panchanathan, Viswanathan, 4,379,720, Cl. 75-251.000.

Papsdorf, John, to Liberty Hardware Manufacturing Corp. Method of making a hinge with an integral pintle. 4,379,360, Cl. 29-11.000.

Papst-Motoren GmbH & Co. KG: *See*—
Muller, Rolf, 4,379,984, Cl. 318-254.000.

Paracchini, Silvano; and Mora, Paolo C., to Mora, Paolo Corvi. Process for the synthesis of vincamine and related indole alkaloids. 4,379,935, Cl. 546-51.000.

Parekh, Girish G.; Blank, Werner J.; and Schirmann, Peter J., to American Cyanamid Company. Cross-linking agents for cationic polymers. 4,379,911, Cl. 528-245.000.

Parr, Andrew F., to Imperial Chemical Industries PLC. D.C. to d.c. converter with plural feedback loops. 4,380,044, Cl. 363-21.000.

Parrish, William J.; and Fletcher, Christopher L., to Hughes Aircraft Company. Charge coupled device focal plane with serial register having interdigitated electrodes. 4,380,056, Cl. 365-183.000.

Pastor, Antonio C.; Pastor, Ricardo C.; and Arita, Kaneto, to Hughes Aircraft Company. Bicameral mode crystal growth apparatus and process. 4,379,733, Cl. 156-616.00R.

Pastor, Ricardo C.: *See*—
Pastor, Antonio C.; Pastor, Ricardo C.; and Arita, Kaneto, 4,379,733, Cl. 156-616.00R.

Peardon, Richard. Horse spa. 4,379,438, Cl. 119-29.000.

Peck, Roger F., to Smith and Nephew Associated Companies Limited. Adhesive suitable for application to skin. 4,379,881, Cl. 524-315.000.

Peerless Electronics Research Corp.: *See*—
Schmid, Carl J., 4,379,637, Cl. 356-411.000.

Pelletier Exploitation: *See*—
Pelletier, Robert, 4,379,668, Cl. 410-77.000.

Pelletier, Robert, to Pelletier Exploitation; and Siren. Locking device for securing cargo in a vehicle. 4,379,668, Cl. 410-77.000.

Pelz, Willibald: *See*—
Liebe, Werner; Lohmer, Karl; and Pelz, Willibald, 4,379,828, Cl. 430-212.000.

Pepin, Christian; and Trahand, Jean P., to Thomson-CSF. Television camera equipped with an anti-blooming device. 4,380,028, Cl. 358-219.000.

Perrault, Frederick; and Perrault, Raymond E., to Whipple Patent Management Corporation. Cable hanger. 4,379,537, Cl. 248-74.00R.

Perrault, Raymond E.: *See*—
Perrault, Frederick; and Perrault, Raymond E., 4,379,537, Cl. 248-74.00R.

Perrot, Alexander: *See*—
Schanz, Friedrich; Schucker, Emil; and Perrot, Alexander, 4,379,523, Cl. 239-222.000.

Perrot-Regnerbau GmbH & Co.: *See*—
Schanz, Friedrich; Schucker, Emil; and Perrot, Alexander, 4,379,523, Cl. 239-222.000.

Perry, Jack I., to Owens-Illinois, Inc. Take-out tong assembly. 4,379,581, Cl. 294-115.000.

Petersen, Tom L., to Multikunst Legepladser I/S. Ground supported playground device. 4,379,550, Cl. 272-52.000.

Pews, Richard G., to Dow Chemical Company, The. Preparation of 2-t-butyl-5-hydroxypyrimidine. 4,379,930, Cl. 544-298.000.

Pfingst, Jurgen: *See*—
Dedden, Hubert; and Pfingst, Jurgen, 4,379,632, Cl. 355-68.000.

Pfizer Inc.: *See*—
Melvin, Lawrence S., Jr.; and Johnson, Michael R., 4,379,783, Cl. 424-184.000.

Pfost, R. Fred, to Newell Research Corporation. Tape system with optically contrasting data marks. 4,380,032, Cl. 360-74.600.

Phelps Dodge Corporation: *See*—
Satchell, Donald P., Jr., 4,379,711, Cl. 436-82.000.

Philip Morris Incorporated: *See*—
Wu, D. Louise; and Swain, James W., 4,379,464, Cl. 131-275.000.

Phillips, Martha E. Connector system for geodesic dome struts. 4,379,649, Cl. 403-172.000.

Phillips Petroleum Company: *See*—
Bailey, Fay W., 4,379,884, Cl. 525-96.000.
Brost, Robert L.; and Gagle, Duane W., 4,379,655, Cl. 405-176.000.
Selman, Charles M.; and Fodor, Lawrence M., 4,379,898, Cl. 526-124.000.

Phillips, Thomas S.: *See*—
Corso, Anthony J.; Colavito, Kathleen M.; and Phillips, Thomas S., 4,379,937, Cl. 546-155.000.

Picker Corporation: *See*—
Vagi, Robert J., 4,380,086, Cl. 378-155.000.

Pieper, Paul; and Cordier, Walter, to Rolf Peddinghaus. Method of cutting a workpiece. 4,379,417, Cl. 83-27.000.

Pietzsch, Ludwig; and Hartmann, Rudolf, to Pietzsch, Ludwig. Suspension means for mounting an instrument susceptible to shock. 4,379,542, Cl. 248-561.000.

Piller, Robert: *See*—
Deutsch, Albert S.; Lyons, Christopher F.; and Piller, Robert, 4,379,830, Cl. 430-309.000.

Pippert, Fred B., to Utex Industries, Inc. Anti-extrusion packing member. 4,379,558, Cl. 277-188.00A.

Pitchford, Edward J.; and Troup, Edward M., to Rain Bird Sprinkler Mfg. Corp. Planocentric gear drive. 4,379,976, Cl. 310-83.000.

Pitney Bowes Inc.: *See*—
Adamoski, William; and Hotchkiss, Alan B., 4,379,383, Cl. 53-266.00A.
Coppola, Vincent G., 4,379,985, Cl. 318-293.000.
Dannatt, Hugh St. L., 4,379,414, Cl. 74-805.000.

Pixton, Betty G.: *See*—
Fruitstone, Mitchell J.; Tilly, Michele M.; and Pixton, Betty G., 4,379,847, Cl. 436-8.000.

Plachno, Robert S., to Mostek Corporation. Delay stage for a clock generator. 4,379,974, Cl. 307-269.000.

Playmont AG: *See*—
Steinegger, Walther, 4,380,007, Cl. 340-365.00C.

Plester, Karl-Heinz: *See*—
Rosenberg, Harry; Plester, Karl-Heinz; Eggenstein, Friedrich; and Terhorst, Gunter, 4,379,424, Cl. 92-13.410.

Plueddemann, Edwin P., to Dow Corning Corporation. Metal extraction from solution and novel compounds used therefor. 4,379,931, Cl. 546-14.000.

Polizzotti, Richard S.; and Krutenat, Richard C., to Exxon Research and Engineering Co. Carburization resistance of austenitic stainless steel tubes. 4,379,745, Cl. 208-132.000.

Pollock, Clyde. Multiplication/division tutorial game. 4,379,700, Cl. 434-208.000.

Polychrome Corporation: *See*—
Deutsch, Albert S.; Lyons, Christopher F.; and Piller, Robert, 4,379,830, Cl. 430-309.000.

Porter, Donald G. Fan accessory for heater. 4,379,446, Cl. 126-110.00B.

Posset, Robert, to BFG Glassgroup. Capacitive systems for touch control switching. 4,380,040, Cl. 361-280.000.

Powell Manufacturing Company, Inc.: *See*—
Wilson, Robert W., 4,379,669, Cl. 414-21.000.

PPG Industries, Inc.: *See*—
Miller, John D.; and Grunewalder, Valentine J., 4,379,885, Cl. 525-108.000.

Prasco Super Seeder Ltd.: *See*—
Klein, Merv V.; Kelm, Dan W.; and Din, Salah U., 4,379,664, Cl. 406-68.000.

Pratap, Prem: *See*—
Angelo, Eugene V.; and Pratap, Prem, 4,379,544, Cl. 251-74.000.

Price, Robert J.: *See*—
Meisel, Thomas C., Jr.; and Price, Robert J., 4,379,674, Cl. 414-699.000.

Primbsch, Erik; and Bickel, Wolf, to Krautkramer-Branson, Inc. Apparatus for producing ultrasonic waves in a workpiece. 4,379,409, Cl. 73-643.000.

Primbsch, Erik: *See*—
Bickel, Wolf; Kaule, Walter; and Primbsch, Erik, 4,379,633, Cl. 356-359.000.

Procter & Gamble Company, The: *See*—
Bolich, Raymond E., Jr., 4,379,753, Cl. 252-106.000.

Profitt, James A.: *See*—
Ong, Helen H.; and Profitt, James A., 4,379,932, Cl. 546-17.000.
Ong, Helen H.; and Profitt, James A., 4,379,933, Cl. 546-17.000.

Proud, Joseph M., to GTE Laboratories Incorporated. Low energy starting aid for high intensity discharge lamps. 4,379,982, Cl. 315-73.000.

Prudhon, Francois J.; and Scicluna, Augustin L., to Rhone-Poulenc Industries. Device for putting into contact substances existing in at least two different phases. 4,379,638, Cl. 366-149.000.

Pruyn, Richard R.: *See*—
Bevan, David; Yee, James S.; and Pruyn, Richard R., 4,380,012, Cl. 343-705.000.

Purdy, Robert H.: *See*—
Rao, Pemmaraju N.; Purdy, Robert H.; and Moore, Perry H., Jr., 4,379,779, Cl. 436-543.000.

Purr, Horst, to Mathias Bauerle GmbH. Washing unit for an offset duplicating machine. 4,379,467, Cl. 134-111.000.

Puschner, Manfred; and Gerdau, Herbert, to ESAB Aktiebolag. Tubular filler wire for fusion welding. 4,379,811, Cl. 428-555.000.

Qualitz, Marion; and Krupp, Viktor A., to Spezial-Papiermaschinenfabrik August Alfred Krupp GmbH & Co. Pressure sensitive recording materials. 4,379,721, Cl. 106-21.000.

Radel, Robert J.; and Sullivan, Jack M., to Tennessee Valley Authority. Preparation of nitrogen fertilizers from oxalate esters prepared by the oxidative carbonylation of alcohols over noble metal catalysts utilizing regenerable 2,5-cyclohexadiene-1,4-dione oxidants. 4,379,939, Cl. 560-193.000.

Rademacher, Thomas P., to NcNeil Corporation. Leg buoy for training swimmers. 4,379,704, Cl. 441-88.000.

Railway Track-Work Company: *See*—
Jenkins, Allan D.; Appelen, John T.; and Lind, Nils, 4,379,371, Cl. 37-104.000.

Rain Bird Sprinkler Mfg. Corp.: *See*—
Pitchford, Edward J.; and Troup, Edward M., 4,379,976, Cl. 310-83.000.

Raj Technology Partnership: *See*—
Sandhu, Jaswinder S., 4,379,408, Cl. 73-603.000.

Raksis, Joseph W.: *See*—
Siadat, Bahram; and Raksis, Joseph W., 4,379,869, Cl. 523-206.000.

Ralph McKay Limited: *See*—
Young, Hartley F.; Verhoef, Hendrikus M., deceased; and Remes, Wally A., 4,379,521, Cl. 238-349.000.

Ramsey Winch Company: *See*—
Ball, Harold M.; and Beach, Robert G., 4,379,502, Cl. 192-71.000.

Rao, Pemmaraju N.; Purdy, Robert H.; and Moore, Perry H., Jr., to American Home Products Corporation. Equilin hapten and assay method. 4,379,779, Cl. 436-543.000.

Rao, Pemmaraju N., to American Home Products Corporation. 17 α-Dihydroequilin hapten and assay method. 4,379,780, Cl. 436-543.000.

Rasmussen, Chris R., to McNeilab, Inc. N-Aryl-N-(4,5,6,7-tetrahydro-1H-1,3, diazepin-2-yl)ureas as antihypertensives. 4,379,786, Cl. 424-244.000.

Rathjen, Hans-Carl; and Koziol, Konrad, to Conradty GmbH Co. Metallelektroden KG. Gas-generating metal electrode for electrochemical processes. 4,379,742, Cl. 204-286.000.

Rattlingourd, Glen D., to Sperry Corporation. Tri-level differential line receiver. 4,380,080, Cl. 375-17.000.

Ray, Ranjan; and Panchanathan, Viswanathan, to Marko Materials, Inc. Nickel-aluminum-boron powders prepared by a rapid solidification process. 4,379,720, Cl. 75-251.000.

Raychem Corporation: *See*—
Martin, Charles L., 4,379,575, Cl. 285-369.000.
Overbergh, Noel M. M., 4,379,887, Cl. 525-184.000.

RCA Corporation: *See*—
Chambers, Robert W.; McNeely, Michael L.; and Torrington, Leslie A., 4,379,686, Cl. 425-290.000.
Torres, Rafael; and Woodward, Oakley M., 4,380,011, Cl. 343-702.000.
Ziegel, Douglas H., 4,379,510, Cl. 209-643.000.

Rea Magnet Wire Co., Inc.: *See*—
Otis, Harold R.; and Blake, Charles E., 4,379,807, Cl. 428-383.000.

Realist, Inc.: *See*—
Graef, John N., 4,379,628, Cl. 353-73.000.

Reaves, V. Randon, to Valinco, Inc. Vane type valve actuator. 4,379,543, Cl. 251-59.000.

Reece, Wendell D.: *See*—
Elliott, Marion D.; and Reece, Wendell D., 4,379,522, Cl. 239-167.000.

Reed, Russell, Jr.; and Chan, May L., to United States of America, Navy. Propellant binders cure catalyst. 4,379,903, Cl. 528-55.000.

Regitz, Gunter: *See*—
Weyer, Rudi; Hitzel, Volker; Geisen, Karl; and Regitz, Gunter, 4,379,785, Cl. 424-244.000.

Rego, Norberto O. S. Process for tanning fish skins. 4,379,708, Cl. 8-94.120.

Reichhold Chemicals, Incorporated: *See*—
Amundsen, Joseph; Goodwin, Robert J.; and Wetzel, William H., 4,379,810, Cl. 428-541.000.

Reimer, Bernd: *See*—
Lutz, Manfred; and Reimer, Bernd, 4,379,821, Cl. 430-58.000.

Reinhall, Ulf. Compaction apparatus for use with lawn grooming equipment. 4,379,385, Cl. 56-16.600.

Reitmeier, Glenn A.; and Marlowe, Frank J. Digital error detection using bracketing. 4,380,069, Cl. 371-31.000.

Remes, Wally A.: *See*—
Young, Hartley F.; Verhoef, Hendrikus M., deceased; and Remes, Wally A., 4,379,521, Cl. 238-349.000.

Reuter, Wolfgang: *See*—
Maier, Roland; Wetzel, Bernd; Woitun, Eberhard; Reuter, Wolfgang; Lechner, Uwe; and Goeth, Hanns, 4,379,784, Cl. 424-229.000.

Reutter, Heinrich, to Reutter Metallwarenfabrik GmbH. Closing cap, particularly for a motor vehicle radiator. 4,379,470, Cl. 137-493.800.

Reutter Metallwarenfabrik GmbH: *See*—
Reutter, Heinrich, 4,379,470, Cl. 137-493.800.

Rexworks Inc.: *See*—
Riddle, Charles F., 4,379,565, Cl. 280-160.000.

Reyes, Peter A.: *See*—
Carlock, Gaylord W.; Garner, Jimmy G.; Gatlin, Charles M.; Guinn, Kenneth F.; and Reyes, Peter A., 4,379,678, Cl. 416-98.000.

Rhee, Jae W. Refrigerator. 4,379,391, Cl. 62-408.000.

Rhone-Poulenc Industries: *See*—
Prudhon, Francois J.; and Scicluna, Augustin L., 4,379,638, Cl. 366-149.000.

Ribi, Valentino, to Honda Giken Kogyo Kabushiki Kaisha. Front suspension system for a motorcycle. 4,379,567, Cl. 280-276.000.

Ricci, Antonio, to Diesse Diagnostica Senese S.r.l. Hemolytic method for the kinetic determination of antistreptolysin O antibodies in blood or serum samples, using oxidized streptolysin O. 4,379,850, Cl. 436-517.000.

Richard Wolf GmbH: *See*—
Bauer, Siegfried; and Boebel, Manfred, 4,379,458, Cl. 604-264.000.

Ricoh Company, Ltd.: *See*—
Mizuma, Kenichi, 4,379,549, Cl. 271-3.100.
Nakamura, Hitoshi; Nishizima, Hideyo; Ema, Hideaki; Harigaya, Makoto; and Otomura, Satoshi, 4,379,820, Cl. 430-58.000.

Riddle, Charles F., to Rexworks Inc. Nonfouling wheel housing for compaction vehicle. 4,379,565, Cl. 280-160.000.

Riedel de Haen Aktiengesellschaft: *See*—
Margold, Franz, 4,379,709, Cl. 8-94.180.

Riehl, Robert E.: *See*—
Albo, Ronald T.; Carney, James E., Jr.; and Riehl, Robert E., 4,379,527, Cl. 242-4.0BE.

Ries, Gerhard: *See*—
Fickel, Walter; and Ries, Gerhard, 4,379,860, Cl. 521-61.000.

Riess, Guido, to Neodontics, Inc. Dental implant. 4,379,694, Cl. 433-201.000.

Riethmuller, Heinz; Sindlinger, Rainer; and Schultz, Peter, to TELDIX GmbH. Gyrocompass. 4,379,365, Cl. 33-316.000.

Riewerts, Paul R.; and Hillman, Stephen M., to Deere & Company. Leveling system for a wheeled implement. 4,379,491, Cl. 172-328.000.

Rines, Carol M.: *See*—
Knowles, Albert H., 4,379,436, Cl. 119-3.000.
Knowles, Albert H., 4,379,437, Cl. 119-3.000.

Rines, Robert H.: *See*—
Knowles, Albert H., 4,379,436, Cl. 119-3.000.
Knowles, Albert H., 4,379,437, Cl. 119-3.000.

Rion, Claude; and Ruckheim, Winfried, to Audi Nsu Auto Union Aktiengesellschaft. Power seat adjuster. 4,379,539, Cl. 248-371.000.

Ripka, Michael S., to Nabisco Brands, Inc. Yeast process and product. 4,379,845, Cl. 435-255.000.

Rite-Hite Corporation: *See*—
Hahn, Norbert; and Hipp, Steven J., 4,379,354, Cl. 14-71.300.

Rixon, Inc.: *See*—
Stuart, Richard L.; and Killmeyer, Fred C., 4,380,062, Cl. 370-20.000.

Robert Bosch GmbH: *See*—
Hamisch, Hans J.; Boruschweitz, Manfred; and Gast, Theodor, 4,379,404, Cl. 73-35.000.
Kurz, Wolfgang; and Leunig, Rainer, 4,379,989, Cl. 320-26.000.

Robertson, Gene V. Latch bolt strike lock. 4,379,577, Cl. 292-341.150.

Robertson, James B.: *See*—
Fripp, Archibald L.; Robertson, James B.; and Breckenridge, Roger A., 4,379,970, Cl. 250-338.000.

Robinson, Joseph G.; Barnes, David I.; and Carswell, Angela M., to Coal Industry (Patents) Limited. Keto/polycarboxy containing resin. 4,379,896, Cl. 525-472.000.

Rock, Erich; and Brunner, Josef, to Julius Blum Ges.m.b.H. Drawer. 4,379,604, Cl. 312-330.00R.

Rockwell International Corporation: *See*—
Frankel, Milton B.; Witucki, Edward F.; and Woolery, Dean O., II, 4,379,894, Cl. 525-403.000.
Grantham, LeRoy F.; and Johanson, James G., 4,379,718, Cl. 75-24.000.
Ho, William W.; and Hall, William F., 4,379,991, Cl. 324-58.50C.
Weber, Robert J., 4,379,996, Cl. 330-296.000.

Rodewald, Paul G.: *See*—
Olson, David H.; and Rodewald, Paul G., 4,379,761, Cl. 252-435.000.

Rodgers, Stuart N.; and Voycheshin, Sidney J. Concrete forming apparatus. 4,379,683, Cl. 425-62.000.

Rohm and Haas Company: *See*—
Clikeman, Richard R.; Jones, Donald H.; Shortridge, Thomas J.; and Troy, Edward J., 4,379,876, Cl. 524-109.000.

Rolf Peddinghaus: *See*—
Pieper, Paul; and Cordier, Walter, 4,379,417, Cl. 83-27.000.

Rollmann, Louis D., to Mobil Oil Corporation. Method for production of heavy oil from tar sands. 4,379,489, Cl. 166-266.000.

Rooney, Clarence S.: *See*—
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,379,791, Cl. 424-270.000.

Roos, Sture G.: *See*—
Andersson, Karl A. I.; and Roos, Sture G., 4,380,083, Cl. 375-120.000.

Root, John A.: *See*—
Clark, Richard P.; Frantz, Robert H.; Hawk, Gary W.; and Root, John A., 4,379,606, Cl. 339-17.0CF.

Rose, John A.; and Dyer, Keith, to AMF Incorporated. Apparatus for manufacture of jigs. 4,379,666, Cl. 409-110.000.

Rosenberg, Harry; Plester, Karl-Heinz; Eggenstein, Friedrich; and Terhorst, Gunter, to Gewerkschaft Eisenhutte Westfalia. Devices for limiting the stroke of a hydraulic ram used in mining apparatus. 4,379,424, Cl. 92-13.410.

Rosenthal, Joel W.; and Dahlberg, Arthur J., to Chevron Research Company. Coal liquefaction process. 4,379,744, Cl. 208-10.000.

Rosenthal, Moshe. Method and device for detecting birefringent substances in liquids. 4,379,634, Cl. 356-365.000.

Rotator, Ltd.: *See*—
Webb, Ronald W.; and Morgan, Robert L., 4,379,552, Cl. 272-67.000.

Roth, Daniel T. Water deflector assembly for swimming pool skimmers. 4,379,749, Cl. 210-169.000.

Rothauser, Ernst H.: *See*—
Janson, Philippe A.; Muller, Hans R.; and Rothauser, Ernst H., 4,380,063, Cl. 370-60.000.

Roudeau, Maurice. Overvoltage protective module. 4,380,038, Cl. 361-119.000.

Roussel, Michel: *See*—
Mimoun, Hubert; Charpentier, Robert; and Roussel, Michel, 4,379,942, Cl. 568-385.000.

Roussin, Michael A.; Jones, Steven D.; and Woody, Albert L., to Caterpillar Tractor Co. Ripper with offset impacting means and slotted shank. 4,379,595, Cl. 299-37.000.

Rovelli, Giuseppe, to Industrie Pirelli S.p.A. Device for keeping a lining-layer in contact with the walls of a civil-engineering works. 4,379,654, Cl. 405-53.000.

Royer, Robert: *See*—
Miller, Daniel R.; Deaton, Thomas; and Royer, Robert, 4,379,508, Cl. 206-507.000.

Ruckheim, Winfried: *See*—
Rion, Claude; and Ruckheim, Winfried, 4,379,539, Cl. 248-371.000.

Rudd, Chester D.: *See*—
Juner, Adolph; Haas, David J.; and Rudd, Chester D., 4,379,481, Cl. 160-310.000.

Ruehle, William H., to Mobil Oil Corporation. F-K Filtering of multiple reflections from a seismic section. 4,380,059, Cl. 367-46.000.

Rundell, Herbert A.; and Horton, Eugene B., Jr., to Texaco Inc. Stripping gland for multicables with connector. 4,379,556, Cl. 277-12.000.

Rusch, Larry P., to Westinghouse Electric Corp. Fluorescent lamp having improved barrier layer. 4,379,981, Cl. 313-489.000.

Ruschitzka, Friedrich. Clamp-bolt shelving. 4,379,430, Cl. 108-107.000.

Rybicki, Edward B., to Warner Lambert Technologies, Inc. 40x Microscope objective. 4,379,623, Cl. 350-414.000.

Ryobi Limited: *See*—
Kobayashi, Takehiro, 4,379,530, Cl. 242-220.000.

Sabater Sanmartin, Jose: *See*—
Calzada Badia, Jose-Maria; Boleda Vila, Antonio; Sabater Sanmartin, Jose; and Villazon Meneses, Maria J., 4,379,793, Cl. 424-274.000.

Saito, Teruo: *See*—
Ueno, Katsuzi; Maruyama, Takashi; Suzuki, Haruo; and Saito, Teruo, 4,379,892, Cl. 525-439.000.

Saka, Hamid J., to ACF Industries, Incorporated. Valve stem packing structure. 4,379,557, Cl. 277-59.000.

Sakamoto, Katsuji: *See*—
Toda, Yuichi; Yano, Kohji; and Sakamoto, Katsuji, 4,379,615, Cl. 350-96.230.

Sakurai, Takakazu: *See*—
Konishi, Seizi; Tashiro, Kazuyuki; Kamigane, Yoshihiro; Sakurai, Takakazu; Tanifuji, Shinya; and Morooka, Yasuo, 4,379,395, Cl. 72-8.000.

Salicini, Sandro, to Carle & Montanari S.p.A. Article feeding device. 4,379,504, Cl. 198-455.000.

Samaritter, Reinhard; Schoberth, Winfried; and Volland, Robert, to Bayer Aktiengesellschaft. Polyurethane foam molding with zones of different indentation hardness and a process for its production. 4,379,856, Cl. 521-51.000.

Samuels, Kenneth E.; and Wiggins, Wayne T., to Standard Oil Company, The. Coalescing aid for high nitrile copolymer latex coatings. 4,379,875, Cl. 524-104.000.

Sanders, Robert E., Jr.: *See*—
Hildeman, Gregory J.; and Sanders, Robert E., Jr., 4,379,719, Cl. 419-60.000.

Sandhu, Jaswinder S., to Raj Technology Partnership. Liquid crystal technique for examining internal structures. 4,379,408, Cl. 73-603.000.

Sandner, Michael R.: *See*—
Baskent, Feyyaz O.; and Sandner, Michael R., 4,379,757, Cl. 252-426.000.

Sanmatsu Kogyo Co., Ltd.: *See*—
Yoritomi, Kenzaburo; Kezuka, Teruo; and Moriya, Mitsumasa, 4,379,751, Cl. 210-659.000.

San Miguel, Anthony, to United States of America, Army. System for measuring plate deformation produced by explosive shock waves, and motion-sensing accelerometer transducer used therein. 4,379,401, Cl. 73-12.000.

Sano, Hiromi; and Suzuki, Masatoshi, to Nippondenso Co., Ltd. Oxygen concentration sensor. 4,379,741, Cl. 204-424.000.

Sanyo Denki Kabushiki Kaisha: *See*—
Andoh, Sadanari; Maeda, Junji; Fukushima, Kiyoshi; Yoneda, Hiroichi; and Jinushi, Naotomo, 4,380,018, Cl. 346-140.00R.

Saotome, Hikoji. Life belt. 4,379,705, Cl. 441-94.000.

Sara, Raymond V., to Union Carbide Corporation. Stress relieved metal/ceramic abradable seals and deformable metal substrate therefor. 4,379,812, Cl. 428-577.000.

Satchell, Donald P., Jr., to Phelps Dodge Corporation. Apparatus and method for visually monitoring an ion exchange fluidized bed. 4,379,711, Cl. 436-82.000.

Sato, Nobuhiro, to TDK Electronics Co., Ltd. Cleaning tape for magnetic recording apparatus. 4,379,800, Cl. 428-148.000.

Sauder Industries, Inc.: *See*—
Sauder, Robert A., 4,379,382, Cl. 52-506.000.

Sauder, Robert A., to Sauder Industries, Inc. Method and apparatus for insulating a furnace having a corrosive atmosphere. 4,379,382, Cl. 52-506.000.

Sauer, Gerhard: *See*—
Horowski, Reinhard; Kehr, Wolfgang; Sauer, Gerhard; Eder, Ulrich; and Lorenz, Hans P., 4,379,790, Cl. 424-261.000.

Savagian, Michael D.: *See*—
Downing, Gerald T.; and Savagian, Michael D., 4,379,805, Cl. 428-346.000.

Savino, Frank M.: *See*—
Borkan, William N.; Savino, Frank M.; and Waltz, Joseph M., 4,379,462, Cl. 128-786.000.

Schaad, Walter: *See*—
Blatter, Johann; and Schaad, Walter, 4,379,958, Cl. 200-148.00A.

Schafer, David E.; and Czajkowski, Albert J., to Monsanto Company. Compositions and methods for reducing herbicidal injury. 4,379,716, Cl. 71-87.000.

Schall, William L., to Occidental Chemical Corporation. Vinyl halide polymer of enhanced plasticizer uptake. 4,379,880, Cl. 524-297.000.

Schanbacher, Larry M.: *See*—
Staub, Herbert W.; Schanbacher, Larry M.; Zencheck, Jack D.; and Young, Cynthia L., 4,379,782, Cl. 424-180.000.

Schanz, Friedrich; Schucker, Emil; and Perrot, Alexander, to Perrot-Regnerbau GmbH & Co. Sprinkler. 4,379,523, Cl. 239-222.000.

Scheichl, Georg: *See*—
Hauslein, Siegfried; Steinberger, Hans; Heigl, Willibald; Scheichl, Georg; and Kauderer, Erwin, 4,379,352, Cl. 5-471.000.

Scheier, Franz: *See*—
Andersen, Heinz-Erhardt; Brebels, Jack J.; Matschke, Klaus; and Scheier, Franz, 4,379,774, Cl. 264-284.000.

Scheinpflug, Gunter, to Triumph-Adler A.G. fur Buro-und Informationstechnik. Large format paper handling assembly for typewriters or like business machines. 4,379,645, Cl. 400-623.000.

Schering Aktiengesellschaft: *See*—
Horowski, Reinhard; Kehr, Wolfgang; Sauer, Gerhard; Eder, Ulrich; and Lorenz, Hans P., 4,379,790, Cl. 424-261.000.
Vorbruggen, Helmut; and Schwarz, Norbert, 4,379,927, Cl. 544-139.000.

Schetina, Otto: *See*—
Zitz, Alfred; Schetina, Otto; Wrulich, Herwig; and Kissich, Arnulf, 4,379,594, Cl. 299-10.000.

Schiel, Christian, to J. M. Voith GmbH. Drying cylinder for machines for making paper and a method for making the drying cylinder. 4,379,369, Cl. 34-110.000.

Schirmann, Peter J.: *See*—
Parekh, Girish G.; Blank, Werner J.; and Schirmann, Peter J., 4,379,911, Cl. 528-245.000.

Schmednecht, Fred C., to Thatcher Engineering Corporation. Method and apparatus for constructing slurry walls. 4,379,658, Cl. 405-267.000.

Schmid, Carl J., to Peerless Electronics Research Corp. Radiation measuring apparatus. 4,379,637, Cl. 356-411.000.

Schmidt, Jorn M., to Danfoss A/S. Method of making an apparatus containing a diaphragm. 4,379,961, Cl. 219-78.010.

Schmitt, Ludwig: *See*—
Goldammer, Georg; and Schmitt, Ludwig, 4,379,386, Cl. 57-405.000.

Schmulian, David E., to Burroughs Corporation. Hammer locating and operational means. 4,379,428, Cl. 101-93.090.

Schnoring, Hildegard; Schranz, Karl-Wilhelm; and Koepke, Gunther, to Agfa-Gevaert Aktiengesellschaft. Process for the production of dispersions and photographic materials. 4,379,836, Cl. 430-377.000.

Schoberth, Winfried: *See*—
Samaritter, Reinhard; Schoberth, Winfried; and Volland, Robert, 4,379,856, Cl. 521-51.000.

Schoening, Josef; Schwiers, Hans-Georg; Elter, Claus; Stracke, Wilfried; and Mauersberger, Reinhard, to Hochtemperatur-Reaktorbau GmbH. Angled gas conduit. 4,380,085, Cl. 376-381.000.

Schonemann, Otto: *See*—
Gubbe, Bernd; Krause, Klaus-Dieter; Neidhardt, Rudolf; and Schonemann, Otto, 4,379,429, Cl. 108-5.000.

Schott, Lawrence A.; and Schott, Roger A. Heat saver for household heaters. 4,379,447, Cl. 126-117.000.

Schott, Lawrence A.: *See*—
Schott, Roger A.; and Schott, Lawrence A., 4,379,393, Cl. 70-234.000.

Schott, Roger A.; and Schott, Lawrence A., to Freedom Industries, Inc. Lock for open frame vehicles. 4,379,393, Cl. 70-234.000.

Schott, Roger A.: *See*—
Schott, Lawrence A.; and Schott, Roger A., 4,379,447, Cl. 126-117.000.

Schranz, Karl-Wilhelm: *See*—
Schnoring, Hildegard; Schranz, Karl-Wilhelm; and Koepke, Gunther, 4,379,836, Cl. 430-377.000.

Schubert & Salzer: *See*—
Goldammer, Georg; and Schmitt, Ludwig, 4,379,386, Cl. 57-405.000.

Schucker, Emil: *See*—
Schanz, Friedrich; Schucker, Emil; and Perrot, Alexander, 4,379,523, Cl. 239-222.000.

Schuler, Heriberto. Reusable bottle holder. 4,379,578, Cl. 294-31.200.

Schulte, Juergen: *See*—
Wojaczek, Egon; Soliman, Mustafa; and Schulte, Juergen, 4,379,661, Cl. 405-299.000.

Schultz, Peter: *See*—
Riethmuller, Heinz; Sindlinger, Rainer; and Schultz, Peter, 4,379,365, Cl. 33-316.000.

Schuyler, Andreas D.; and Maier, Richard K., to Skymar Corporation. Platform tennis paddle. 4,379,554, Cl. 273-67.00R.

Schwarz, Albert J., to Imperial Clevite Inc. Tube bender construction. 4,379,400, Cl. 72-388.000.

Schwarz, Norbert: *See*—
Vorbruggen, Helmut; and Schwarz, Norbert, 4,379,927, Cl. 544-139.000.

Schwiers, Hans-Georg: *See*—
Schoening, Josef; Schwiers, Hans-Georg; Elter, Claus; Stracke, Wilfried; and Mauersberger, Reinhard, 4,380,085, Cl. 376-381.000.

Scicluna, Augustin L.: *See*—
Prudhon, Francois J.; and Scicluna, Augustin L., 4,379,638, Cl. 366-149.000.

Scientific Pharmaceuticals, Inc.: *See*—
Orlowski, Jan A.; Butler, David V.; and Kidd, Patrick D., 4,379,695, Cl. 433-217.000.

Scott, Paul R., to Shell Oil Company. Pipeline gel plug. 4,379,722, Cl. 106-287.170.

Sedlmair, Gerhard, to Marker-Patentverwertungsgesellschaft mbH. Ski stopper. 4,379,570, Cl. 280-605.000.

Selas Corporation of America: *See*—
Morck, Charles W., Jr., 4,379,689, Cl. 431-284.000.

Selman, Charles M.; and Fodor, Lawrence M., to Phillips Petroleum Company. Polymerization catalysts. 4,379,898, Cl. 526-124.000.

Sengoku, Ikuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for fixing a window molding onto a windowpane. 4,379,379, Cl. 52-208.000.

Sewell Plastics, Inc.: *See*—
Long, Geoffrey A. D.; and McPike, Brian C., 4,379,731, Cl. 156-356.000.

Sexton, James H.: *See*—
Masse, Lucien; Medlin, William L.; and Sexton, James H., 4,379,407, Cl. 73-579.000.

Seybold, Guenther: *See*—
Graser, Fritz; and Seybold, Guenther, 4,379,934, Cl. 546-37.000.

Seymour, Robert W.: *See*—
Weaver, James C.; and Seymour, Robert W., 4,379,801, Cl. 428-220.000.
Weaver, James C.; and Seymour, Robert W., 4,379,802, Cl. 428-220.000.

Sharov, Vyacheslav G.: *See*—
Shkidchenko, Alexandr N.; Nesterov, Boris F.; Sharov, Vyacheslav G.; and Smolin, Boris I., 4,379,846, Cl. 435-316.000.

Sharp Kabushiki Kaisha: *See*—
Inoue, Tomohiro, 4,379,640, Cl. 368-63.000.
Kuwagaki, Hiroshi; Yano, Kohzo; and Takechi, Sadatoshi, 4,379,619, Cl. 350-357.000.

Sharp, Shelby P., to Standard Oil Company (Indiana). Method for removal of asphaltene depositions with amine-activated disulfide oil. 4,379,490, Cl. 166-304.000.

Shaw, Michael J., to Allied Paper, Incorporated. Conductive barrier coat for electrostatic masters. 4,379,822, Cl. 430-62.000.

Shek, Thompson: *See*—
Turner, W. Bard; and Shek, Thompson, 4,379,973, Cl. 307-112.000.

Shell Oil Company: *See*—
Brownscombe, Thomas F., 4,379,908, Cl. 528-91.000.
Haynes, George R., 4,379,891, Cl. 525-342.000.
Scott, Paul R., 4,379,722, Cl. 106-287.170.

Sherwood Medical Company: *See*—
Cornell, William D.; and Evans, Carnot, 4,379,456, Cl. 128-314.000.

Sherwood, Tom W., to Unique Products Company, Inc. Paper bag stiffener. 4,379,519, Cl. 229-55.000.

Sheshtawy, Adel, to International Petroleum Engineering Corporation. Replaceable drill stabilizer sleeve. 4,379,494, Cl. 175-325.000.

Shiba, Haruo, to TDK Electronics Co., Ltd. Magnetic tape cassette. 4,380,030, Cl. 360-132.000.

Shiever, John W.: *See*—
Fleming, James W., Jr.; and Shiever, John W., 4,379,616, Cl. 350-96.340.
Shima, George T., to Burroughs Corporation. Single transmission bus data network employing a daisy-chained bus data assignment control line which can bypass non-operating stations. 4,380,052, Cl. 364-900.000.
Shimada, Sumio: *See*—
Hirosawa, Kuninori; and Shimada, Sumio, 4,379,859, Cl. 521-59.000.
Shimbashi, Ichiro; Ikegami, Hiroshi; and Bando, Hideharu, to Nippon Steel Corporation. Continuous cold rolling and annealing apparatus for steel strip. 4,379,547, Cl. 266-103.000.
Shinto Kogio, Ltd.: *See*—
Nishikawa, Kazuyuki; and Hirao, Katsumi, 4,379,865, Cl. 523-139.000.
Shipley, Randall S.; Lowery, Kirby, Jr.; and Gibbs, Ronald L., to Dow Chemical Company, The. High efficiency catalyst for polymerizing olefins. 4,379,760, Cl. 252-429.00B.
Shiraishi, Mitsura: *See*—
Numata, Mitsuo; Mimamida, Isao; Yamaoka, Masayoshi; Shiraishi, Mitsura; and Miyawaki, Toshio, 4,379,924, Cl. 544-27.000.
Shkidchenko, Alexandr N.; Nesterov, Boris F.; Sharov, Vyacheslav G.; and Smolin, Boris I. Fermentation apparatus. 4,379,846, Cl. 435-316.000.
Shockley, Richard C., to Standard Oil Company, The. Acoustic degenerate four-wave mixing phase-conjugate reflector. 4,379,998, Cl. 333-150.000.
Shortridge, Thomas J.: *See*—
Clikeman, Richard R.; Jones, Donald H.; Shortridge, Thomas J.; and Troy, Edward J., 4,379,876, Cl. 524-109.000.
Shrum, Kenneth L., to Sun Studs, Inc. Veneer lathe log charger system having enhanced accuracy and rate of production. 4,379,477, Cl. 144-357.000.
Shulman, Lawrence M.: *See*—
Leventer, William; and Shulman, Lawrence M., 4,380,027, Cl. 358-147.000.
Siadat, Bahram; and Raksis, Joseph W., to W. R. Grace & Co. Cationic latices and their electrodeposition. 4,379,869, Cl. 523-206.000.
Siemens Aktiengesellschaft: *See*—
Kunze, Dieter, 4,379,473, Cl. 138-167.000.
Liertz, Heinrich, 4,379,614, Cl. 350-96.210.
Steinberger, Wolfgang; and Stempfl, Gerhard, 4,380,019, Cl. 346-140.00R.
Wilhelm, Wilhelm, 4,380,060, Cl. 370-5.000.
Sievers, Kirk A.; and Mortonson, Robert W., to Motorola Inc. Fault detection and diagnostic system for automotive battery charging systems. 4,379,990, Cl. 322-99.000.
Sigma concern: *See*—
Langr, Oldrich, 4,379,397, Cl. 72-95.000.
Sikora, Helga: *See*—
Herwig, Walter; Klupfel, Kurt; Sikora, Helga; and Sprengel, Heide, 4,379,834, Cl. 430-329.000.
Silverman, Ronald R.: *See*—
Hansen, Howard H.; Lasky, Jerome B.; and Silverman, Ronald R., 4,379,727, Cl. 148-1.500.
Simko, Aladar O., to Ford Motor Company. Electromagnetically controlled fuel injection pump. 4,379,442, Cl. 123-458.000.
Simmons, Lovel R. Trailer with adjustable wheels. 4,379,571, Cl. 280-656.000.
Sindlinger, Rainer: *See*—
Riethmuller, Heinz; Sindlinger, Rainer; and Schultz, Peter, 4,379,365, Cl. 33-316.000.
Singer Company, The: *See*—
Hauser, William G., 4,379,601, Cl. 312-21.000.
Siren: *See*—
Pelletier, Robert, 4,379,668, Cl. 410-77.000.
Sjolinder, Per-Olof. Traction benches. 4,379,450, Cl. 128-74.000.
SKF Industries, Inc.: *See*—
Sundqvist, Yngve, 4,379,599, Cl. 308-187.000.
Skinner, Ronald W.: *See*—
Dalton, Augustine I., Jr.; and Skinner, Ronald W., 4,379,778, Cl. 423-584.000.
Skistimas, Donald V.: *See*—
Holmes, Rory A.; and Skistimas, Donald V., 4,379,799, Cl. 428-131.000.
Skymar Corporation: *See*—
Schuyler, Andreas D.; and Maier, Richard K., 4,379,554, Cl. 273-67.00R.
Slater Electric Inc.: *See*—
Bowden, Wade R., Jr., 4,379,607, Cl. 339-40.000.
Slysh, Paul, to General Dynamics Corp./Convair Division. Expandable panel and truss system/antenna/solar panel. 4,380,013, Cl. 343-753.000.
Smethers, Rollo G., Jr.: *See*—
Caldwell, Edward W.; and Smethers, Rollo G., Jr., 4,379,533, Cl. 244-118.100.
Smith and Nephew Associated Companies Limited: *See*—
Peck, Roger F., 4,379,881, Cl. 524-315.000.
Smith, Peter R.; and Coleman, Charles, to Statitrol, Inc. Pyroelectric sensor. 4,379,971, Cl. 250-342.000.
Smolin, Boris I.: *See*—
Shkidchenko, Alexandr N.; Nesterov, Boris F.; Sharov, Vyacheslav G.; and Smolin, Boris I., 4,379,846, Cl. 435-316.000.
Snyder, Donald Q., to Western Electric Company, Inc. Methods of and apparatus for terminating a lightguide fiber ribbon. 4,379,771, Cl. 264-1.500.
Snyder, Edward A.: *See*—
Lock, William E.; and Snyder, Edward A., 4,379,818, Cl. 430-5.000.
Snyder, Martin, to C. R. Bard, Inc. Copolymer composition and delivery system for providing a protective barrier film for the skin. 4,379,863, Cl. 523-105.000.
Societe Francaise d'Agrafage Industriel - Sofragraf: *See*—
Barlogis, Rene, 4,379,516, Cl. 222-146.0HE.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.": *See*—
Hallinger, Claude C.; and Kervistin, Robert, 4,379,677, Cl. 415-175.000.
Soliman, Mustafa: *See*—
Wojaczek, Egon; Soliman, Mustafa; and Schulte, Juergen, 4,379,661, Cl. 405-299.000.
Solomon, Frank; and Grun, Charles, to Diamond Shamrock Corporation. Method for forming an electrode active layer or sheet. 4,379,772, Cl. 264-49.000.
Sonderegger, Hans C.: *See*—
Engeler, Paul; Sonderegger, Hans C.; and Wolfer, Peter, 4,379,405, Cl. 73-167.000.
Sony Corporation: *See*—
Odaka, Kentarou, 4,380,071, Cl. 371-40.000.
Soong, Jakob C. K., to Erie Technological Products, Inc. Low temperature firing (1800°-2100° F.) of barium titanate with flux (lead titanate-bismuth titanate-zinc oxide and boron oxide). 4,379,854, Cl. 501-138.000.
Sosa, Daniel T.: *See*—
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Sosa, Thomas J.; and Sosa, Daniel T., to Sosa, Daniel T. Turbine ventilator. 4,379,972, Cl. 290-44.000.
Speed Clip Manufacturing Corp.: *See*—
Green, Bernard J.; and Chorosevic, Jerome J., 4,379,596, Cl. 301-5.00B.
Speice, Donald G. Revolving solar lounger. 4,379,588, Cl. 297-217.000.
Spencer, David H.; Steiner, Marvin E.; and Lang, Donald H., to Burroughs Corporation. Defect tolerant memory. 4,380,066, Cl. 371-10.000.
Sperr, Charles J., Jr.; and Sperr, Douglas C. Evaporative cooler. 4,379,712, Cl. 55-257.00R.
Sperr, Douglas C.: *See*—
Sperr, Charles J., Jr.; and Sperr, Douglas C., 4,379,712, Cl. 55-257.00R.
Sperry Corporation: *See*—
Rattlingourd, Glen D., 4,380,080, Cl. 375-17.000.
Spezial-Papiermaschinenfabrik August Alfred Krupp GmbH & Co.: *See*—
Qualitz, Marion; and Krupp, Viktor A., 4,379,721, Cl. 106-21.000.
Spiegelman, Sol, to Columbia University in the City of New York, The Trustees of. Method for detecting cancer. 4,379,839, Cl. 435-5.000.
Sprecher & Schuh AG: *See*—
Blatter, Johann; and Schaad, Walter, 4,379,958, Cl. 200-148.00A.
Sprengel, Heide: *See*—
Herwig, Walter; Klupfel, Kurt; Sikora, Helga; and Sprengel, Heide, 4,379,834, Cl. 430-329.000.
Staar S.A.: *See*—
d'Alayer de Costemore d'Arc, Stephane M. A., 4,380,031, Cl. 360-74.100.
Staempfli, Jackie, to Valinor, S.A. Grapnel. 4,379,580, Cl. 294-86.00R.
Staeubli Ltd.: *See*—
Mueller, Otto, 4,379,474, Cl. 139-21.000.
Standard Oil Co., The: *See*—
Grasselli, Robert K.; Suresh, Dev D.; and Bridgeman, David R., 4,379,925, Cl. 544-102.000.
Samuels, Kenneth E.; and Wiggins, Wayne T., 4,379,875, Cl. 524-104.000.
Shockley, Richard C., 4,379,998, Cl. 333-150.000.
Standard Oil Company (Indiana): *See*—
Sharp, Shelby P., 4,379,490, Cl. 166-304.000.
Stanford University: *See*—
Harris, Stephen E., 4,380,072, Cl. 372-5.000.
Linvill, John G., 4,379,697, Cl. 434-114.000.
Stanley Electric Co. Ltd.: *See*—
Kubota, Yutaka, 4,380,026, Cl. 358-106.000.
State of Israel, Rafael Armament Development Authority, Ministry of Defense: *See*—
Carmel, Yuval; and Eylon, Shmuel, 4,379,977, Cl. 378-136.000.
Statitrol, Inc.: *See*—
Smith, Peter R.; and Coleman, Charles, 4,379,971, Cl. 250-342.000.
Staub, Herbert W.; Schanbacher, Larry M.; Zencheck, Jack D.; and Young, Cynthia L., to General Foods Corporation. Low-calorie foods. 4,379,782, Cl. 424-180.000.
Stein, Marc T., to Medtronic, Inc. Cardiac pacemaker sense amplifier. 4,379,459, Cl. 128-419.0PG.
Steinberger, Hans: *See*—
Hauslein, Siegfried; Steinberger, Hans; Heigl, Willibald; Scheichl, Georg; and Kauderer, Erwin, 4,379,352, Cl. 5-471.000.
Steinberger, Wolfgang; and Stempfl, Gerhard, to Siemens Aktiengesellschaft. Device for monitoring the supply of printing fluid in ink printing devices. 4,380,019, Cl. 346-140.00R.
Steinegger, Walther, to Playmont AG. Proximity switch. 4,380,007, Cl. 340-365.00C.
Steiner, Alfred, to Steiner Silidur A.G. Building blocks. 4,379,659, Cl. 405-284.000.

Steiner, Marvin E.: *See—*
Spencer, David H., 4,380,066, Cl. 371-10.000.
Steiner Silidur A.G.: *See—*
Steiner, Alfred, 4,379,659, Cl. 405-284.000.
Steiner, William G., to Lockheed Corporation. Automatic circuit identifier. 4,380,070, Cl. 371-20.000.
Stemmler, Ingo; Muller, Hanns P.; and Wagner, Kuno, to Bayer Aktiengesellschaft. Process for the preparation of polyisocyanates containing isocyanurate groups and their use in the production of polyurethanes. 4,379,905, Cl. 528-73.000.
Stempfl, Gerhard: *See—*
Steinberger, Wolfgang; and Stempfl, Gerhard, 4,380,019, Cl. 346-140.00R.
Stephens, Eugene. Alarm watch with remote sonic amplifier. 4,379,639, Cl. 368-12.000.
Sterling Drug Inc.: *See—*
Clarke, Robert L. G., 4,379,936, Cl. 546-91.000.
Crounse, Nathan N., 4,379,710, Cl. 8-527.000.
Stewart, Gary E.: *See—*
Lomeli, Ronald C.; and Stewart, Gary E., 4,379,573, Cl. 428-42.000.
Stinshoff, Klaus: *See—*
Gorka, Gunther; and Stinshoff, Klaus, 4,379,840, Cl. 435-10.000.
Stoev, Stoycho M.; Dshendova, Shtelyana D.; Stoyanov, Kiril N.; Dochev, Raycho V.; and Krestev, Tzvetan P., to Vish-Minnogeoloshki Institute. Method for regulating the granulometric characteristic of the components in metallurgical slags. 4,379,714, Cl. 65-19.000.
Storrs, Charles M.: *See—*
Hendershot, Homer; and Storrs, Charles M., 4,379,665, Cl. 408-204.000.
Stoy, Vladimir A. Polymer composition comprising polyacrylonitrile polymer and multi-block copolymer. 4,379,874, Cl. 524-27.000.
Stoyanov, Kiril N.: *See—*
Stoev, Stoycho M.; Dshendova, Shtelyana D.; Stoyanov, Kiril N.; Dochev, Raycho V.; and Krestev, Tzvetan P., 4,379,714, Cl. 65-19.000.
Stracke, Wilfried: *See—*
Schoening, Josef; Schwiers, Hans-Georg; Elter, Claus; Stracke, Wilfried; and Mauersberger, Reinhard, 4,380,085, Cl. 376-381.000.
Strauss, Howard: *See—*
Joffe, Edward J., 4,379,514, Cl. 221-279.000.
Strick, Leonard. External door for vehicles. 4,379,585, Cl. 296-146.000.
Strickland, George A.: *See—*
McLaughlin, Joseph E.; and Strickland, George A., 4,379,886, Cl. 525-162.000.
Strong, Terence: *See—*
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Stuart, Richard L.; and Killmeyer, Fred C., to Rixon, Inc. Communication system providing simultaneous two-way transmission. 4,380,062, Cl. 370-20.000.
Suga, Shuji: *See—*
Kobayashi, Kiyoshi; and Suga, Shuji, 4,379,355, Cl. 15-101.000.
Sugasawa, Fukashi: *See—*
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Sugawara, Tsutomu: *See—*
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Sugimito, Mamoru: *See—*
Fujii, Setsuro; Sugimito, Mamoru; and Yaegashi, Takashi, 4,379,764, Cl. 260-112.50R.
Sukrushev, Vitaly S.: *See—*
Vakhnin, Gennady I.; Verty, Vladimir G.; Voronin, Pavel G.; Gurov, Evgeny I.; Isaikin, Vladimir G.; Mishakov, Vladimir N.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Tabakov, Vladimir P.; Tjunkin, Boris A.; and Fotieva, Ljudmila I., 4,379,592, Cl. 299-2.000.
Sullivan, Jack M.: *See—*
Radel, Robert J.; and Sullivan, Jack M., 4,379,939, Cl. 560-193.000.
Sulzbach, Reinhard A., to Hoechst Aktiengesellschaft. Raw polymer powder of a modified tetrafluoroethylene polymer having a high bulk density and a good powder flow index and also a process for the manufacture and use thereof. 4,379,900, Cl. 526-247.000.
Sumitomo Chemical Company, Limited: *See—*
Funaki, Yuji; Tanaka, Shizuya; and Matsuo, Noritada, 4,379,921, Cl. 542-458.000.
Ueno, Katsuzi; Maruyama, Takashi; Suzuki, Haruo; and Saito, Teruo, 4,379,892, Cl. 525-439.000.
Sumitomo Electric Industries, Ltd.: *See—*
Toda, Yuichi; Yano, Kohji; and Sakamoto, Katsuji, 4,379,615, Cl. 350-96.230.
Sun-Ohio, Inc.: *See—*
Norman, Oscar L.; and Handler, Laurence H., 4,379,746, Cl. 208-262.000.
Norman, Oscar L., 4,379,752, Cl. 210-712.000.
Sun Studs, Inc.: *See—*
Berry, Larry R., 4,379,476, Cl. 144-357.000.
Shrum, Kenneth L., 4,379,477, Cl. 144-357.000.
Sundqvist, Yngve, to SKF Industries, Inc. Bearing inner ring. 4,379,599, Cl. 308-187.000.
Suresh, Dev D.: *See—*
Grasselli, Robert K.; Suresh, Dev D.; and Bridgeman, David R., 4,379,925, Cl. 544-102.000.
Suzuki, Haruo: *See—*
Ueno, Katsuzi; Maruyama, Takashi; Suzuki, Haruo; and Saito, Teruo, 4,379,892, Cl. 525-439.000.
Suzuki, Hiroo; Yamamoto, Koichi; Ohno, Yasuhide; and Miyamura, Kou, to Nippon Steel Corporation. Prevention of cracking of continuously cast steel slabs containing boron. 4,379,482, Cl. 164-485.000.
Suzuki, Hirosuke. Foamed plastics. 4,379,858, Cl. 521-54.000.
Suzuki, Masatoshi: *See—*
Sano, Hiromi; and Suzuki, Masatoshi, 4,379,741, Cl. 204-424.000.
Suzuki, Tadashi: *See—*
Kishi, Norimasa; and Suzuki, Tadashi, 4,380,048, Cl. 364-424.100.
Suzuki, Yoshiro, to Olympus Optical Company Limited. Transfer roller for electrophotographic apparatus. 4,379,630, Cl. 355-3.0TR.
Suzuki, Yutaka: *See—*
Ooishi, Minoru; Mochizuki, Teruji; and Suzuki, Yutaka, 4,379,997, Cl. 330-298.000.
Swain, James W.: *See—*
Wu, D. Louise; and Swain, James W., 4,379,464, Cl. 131-275.000.
Sydorko, Peter J.: *See—*
Anderson, Larry C.; Lausch, Robert C.; and Sydorko, Peter J., 4,379,730, Cl. 156-324.000.
Syntex (U.S.A.) Inc.: *See—*
Gallop, Paul M.; and Korb, Donald R., 4,379,864, Cl. 523-106.000.
Szukhent, Steve, Jr., to Tex-All Company, Inc. Ventilator apparatus for a flexible sheet. 4,379,468, Cl. 135-88.000.
Szybowicz, Wolfgang: *See—*
Buchmann, Heinz; Mayer, Bruno; and Szybowicz, Wolfgang, 4,379,652, Cl. 404-117.000.
Tabakov, Vladimir P.: *See—*
Vakhnin, Gennady I.; Verty, Vladimir G.; Voronin, Pavel G.; Gurov, Evgeny I.; Isaikin, Vladimir G.; Mishakov, Vladimir N.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Tabakov, Vladimir P.; Tjunkin, Boris A.; and Fotieva, Ljudmila I., 4,379,592, Cl. 299-2.000.
Tabata, Yujin: *See—*
Yamada, Mikio; and Tabata, Yujin, 4,379,755, Cl. 252-312.000.
Tachibana, Matsuo: *See—*
Takahashi, Sadayuki; Komeda, Yorio; Tachibana, Matsuo; and Nosaka, Kenkichi, 4,379,673, Cl. 414-686.000.
Tada, Tetsuya; and Morishita, Yutaka, to Canyon Corporation. Injection molding machine. 4,379,685, Cl. 425-183.000.
Taiyo Denko Kabushiki Kaisha: *See—*
Kashiwagi, Hidehiro, 4,379,724, Cl. 134-1.000.
Takabe, Reiichiro: *See—*
Chiyoda, Hironobu; Yamazaki, Hisayuki; and Takabe, Reiichiro, 4,379,762, Cl. 252-507.000.
Takada, Toshiaki: *See—*
Hagiwara, Yutaka; Takada, Toshiaki; and Yamazaki, Tetu, 4,379,501, Cl. 188-218.0XL.
Takada, Yukimitsu; Harada, Hiroshi; and Takubo, Shuji, to Yamaha Hatsudoki Kabushiki Kaisha. Intake duct for an outboard engine. 4,379,702, Cl. 440-77.000.
Takahashi, Hiroshi, to Canon Kabushiki Kaisha. Memory addressing system for sequentially accessing all memory addresses in a memory area. 4,380,053, Cl. 364-900.000.
Takahashi, Nobuyuki: *See—*
Nakatsukasa, Masashi; and Takahashi, Nobuyuki, 4,379,743, Cl. 204-298.000.
Takahashi, Sadayuki; Komeda, Yorio; Tachibana, Matsuo; and Nosaka, Kenkichi, to Kubota Ltd. Arrangement for attaching working implements to vehicle. 4,379,673, Cl. 414-686.000.
Takahashi, Seitaro: *See—*
Ohmi, Hidehiko; Kitagawa, Katsuhisa; Morimoto, Shoji; Kubo, Tateo; Ohno, Misao; and Takahashi, Seitaro, 4,379,512, Cl. 215-327.000.
Takamatsu, Mashiro; Nakao, Makoto; and Ogawa, Isao, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Jeco Co., Ltd. Apparatus for illuminating instrument pointers. 4,380,043, Cl. 362-26.000.
Takamura, Takuo: *See—*
Yoshimoto, Hisanari; Tonomura, Taka; and Takamura, Takuo, 4,379,667, Cl. 409-234.000.
Takanashi, Yukio; Yakabe, Tooru; and Asano, Shunji, to Tokyo Shibaura Denki Kabushiki Kaisha. Quick operating cathode. 4,379,980, Cl. 313-446.000.
Takasugi, Hisashi: *See—*
Ueda, Ikuo; Takaya, Takao; Kobayashi, Masakazu; Masugi, Takashi; Takasugi, Hisashi; Kochi, Hiromu; and Kitaguchi, Tadashi, 4,379,922, Cl. 544-16.000.
Takatori Machinery Works Ltd.: *See—*
Nishikawa, Masao, 4,379,384, Cl. 53-415.000.
Takaya, Takao: *See—*
Ueda, Ikuo; Takaya, Takao; Kobayashi, Masakazu; Masugi, Takashi; Takasugi, Hisashi; Kochi, Hiromu; and Kitaguchi, Tadashi, 4,379,922, Cl. 544-16.000.
Takechi, Sadatoshi: *See—*
Kuwagaki, Hiroshi; Yano, Kohzo; and Takechi, Sadatoshi, 4,379,619, Cl. 350-357.000.
Takeda Chemical Industries, Ltd.: *See—*
Numata, Mitsuo; Mimamida, Isao; Yamaoka, Masayoshi; Shiraishi, Mitsura; and Miyawaki, Toshio, 4,379,924, Cl. 544-27.000.
Takehata, Tetsuro: *See—*
Asari, Akira; Noyori, Tatsuhiko; and Takehata, Tetsuro, 4,379,398, Cl. 72-273.500.
Takematsu, Yoshiyuki, to Fuji Koeki Corporation. Electric flash device. 4,379,983, Cl. 315-151.000.

Takubo, Shuji: *See*—
Takada, Yukimitsu; Harada, Hiroshi; and Takubo, Shuji, 4,379,702, Cl. 440-77.000.
Tall, Marion A. Magnifier viewer and stand. 4,379,618, Cl. 350-239.000.
Tamai, Kiminori; and Hayama, Masashi, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,379,803, Cl. 428-328.000.
Tanabe, Akira: *See*—
Uchiumi, Yoshihisa; and Tanabe, Akira, 4,379,625, Cl. 350-528.000.
Tanabe, Yoshimitu: *See*—
Asano, Makoto; Tanabe, Yoshimitu; and Murakami, Hisamichi, 4,379,897, Cl. 525-506.000.
Tanaka, Shinken; and Yuda, Takuo, to Nissan Motor Co., Ltd.; and Nifco Inc. Fixing structure for radiator grille. 4,379,648, Cl. 403-24.000.
Tanaka, Shizuya: *See*—
Funaki, Yuji; Tanaka, Shizuya; and Matsuo, Noritada, 4,379,921, Cl. 542-458.000.
Tanaka, Tsuneo, to Tokyo Shibaura Denki Kabushiki Kaisha. X-ray film cassette. 4,380,087, Cl. 378-186.000.
Tanifuji, Shinya: *See*—
Konishi, Seizi; Tashiro, Kazuyuki; Kamigane, Yoshihiro; Sakurai, Takakazu; Tanifuji, Shinya; and Morooka, Yasuo, 4,379,395, Cl. 72-8.000.
Tanner, Jesse H. Aircraft location and collision avoidance system. 4,380,050, Cl. 364-461.000.
Tarmac Industrial Holdings Limited: *See*—
Cross, Sydney H., 4,379,729, Cl. 156-73.600.
Tashiro, Kazuyuki: *See*—
Konishi, Seizi; Tashiro, Kazuyuki; Kamigane, Yoshihiro; Sakurai, Takakazu; Tanifuji, Shinya; and Morooka, Yasuo, 4,379,395, Cl. 72-8.000.
Tassoney, Joseph P., to Occidental Oil Shale, Inc. Two-stage oil shale retorting process and disposal of spent oil shale. 4,379,591, Cl. 299-2.000.
Tate, Dennis J.; and Trevino, Henry, to Ethyl Development Corporation. Oriented injection blow molded container production. 4,379,688, Cl. 425-526.000.
Tatemoto, Masayoshi: *See*—
Amimoto, Yoshio; and Tatemoto, Masayoshi, 4,379,901, Cl. 526-247.000.
Taylor, Edwin C., Sr., to Owens-Illinois, Inc. Three cell divider for carton. 4,379,518, Cl. 229-15.000.
Taylor, Merrick W.; Allen, George R.; and Strong, Terence, to Motor Panels (Coventry) Limited. Vehicle cabs having airflow deflectors on their roofs. 4,379,583, Cl. 296-1.00S.
TDK Electronics Co., Ltd.: *See*—
Ota, Hiroshi; Horigome, Eiji; and Azegami, Hitoshi, 4,380,035, Cl. 360-130.330.
Sato, Nobuhiro, 4,379,800, Cl. 428-148.000.
Shiba, Haruo, 4,380,030, Cl. 360-132.000.
Tamai, Kiminori; and Hayama, Masashi, 4,379,803, Cl. 428-328.000.
TELDIX GmbH: *See*—
Riethmuller, Heinz; Sindlinger, Rainer; and Schultz, Peter, 4,379,365, Cl. 33-316.000.
Telefonaktiebolaget L M Ericsson: *See*—
Andersson, Karl A. I.; and Roos, Sture G., 4,380,083, Cl. 375-120.000.
Teleprompter Corporation: *See*—
Warner, Paul, 4,379,947, Cl. 179-1.0GD.
Tennessee Valley Authority: *See*—
Radel, Robert J.; and Sullivan, Jack M., 4,379,939, Cl. 560-193.000.
Terhorst, Gunter: *See*—
Rosenberg, Harry; Plester, Karl-Heinz; Eggenstein, Friedrich; and Terhorst, Gunter, 4,379,424, Cl. 92-13.410.
Tessler, Martin M.; Wurzburg, Otto B.; and Dirscherl, Teresa A., to National Starch and Chemical Corporation. Starch sulfomaleate half-esters, a method for their preparation and their use to prepare starch disulfosuccinate half-esters. 4,379,919, Cl. 536-108.000.
Tex-All Company, Inc.: *See*—
Szukhent, Steve, Jr., 4,379,468, Cl. 135-88.000.
Texaco Inc.: *See*—
Rundell, Herbert A.; and Horton, Eugene B., Jr., 4,379,556, Cl. 277-12.000.
Textron, Inc.: *See*—
Carlock, Gaylord W.; Garner, Jimmy G.; Gatlin, Charles M.; Guinn, Kenneth F.; and Reyes, Peter A., 4,379,678, Cl. 416-98.000.
Thatcher Engineering Corporation: *See*—
Schmednecht, Fred C., 4,379,658, Cl. 405-267.000.
Thedford, Dale E.; and Wilson, Gil C., to AG Industries International, Ltd. Livestock spray apparatus. 4,379,440, Cl. 119-159.000.
Theiler, Richard F., to Armour and Company. Process for preparing cooked bacon having reduced levels of N-nitrosamines. 4,379,794, Cl. 426-266.000.
Theodoropulos, Spyros, to Union Carbide Corporation. Synthesis of amides. 4,379,928, Cl. 544-176.000.
Thibodeaux, Gene. Method and apparatus for preventing wireline kinking in a directional drilling system. 4,379,493, Cl. 175-61.000.
Thirouard, Michel: *See*—
Lehureau, Jean-Claude; Magna, Henriette; and Thirouard, Michel, 4,380,016, Cl. 346-135.100.
Thomas, Richard E.; and Greene, Richard F., to United States of America, Navy. Controlled porosity sheet for thermionic dispenser cathode and method of manufacture. 4,379,979, Cl. 313-346.00R.
Thompson, James L.; and Hornkohl, Owen T., to Moehlenpah Industries, Inc. Truss-fabricating machine. 4,379,426, Cl. 100-100.000.
Thomson-CSF: *See*—
de Couasnon, Tristan, 4,380,068, Cl. 371-24.000.
Lehureau, Jean-Claude; Magna, Henriette; and Thirouard, Michel, 4,380,016, Cl. 346-135.100.
Llabres, Raymond, 4,379,507, Cl. 206-444.000.
Pepin, Christian; and Trahand, Jean P., 4,380,028, Cl. 358-219.000.
Thonnessen, Dieter: *See*—
Bianchi, Valerio; Abidin, Anwar; and Thonnessen, Dieter, 4,379,770, Cl. 261-142.000.
Thordarson, Petur. Liquid level sensor and alarm system. 4,379,434, Cl. 116-228.000.
Thyssen Industrie AG: *See*—
Block, Siegmar, 4,379,662, Cl. 405-302.000.
Buchmann, Heinz; Mayer, Bruno; and Szybowicz, Wolfgang, 4,379,652, Cl. 404-117.000.
Tigg Corporation: *See*—
Tiggelbeck, Donald D., 4,379,750, Cl. 210-232.000.
Tiggelbeck, Donald D., to Tigg Corporation. Fluid-solids contact device and improved fluid distributor. 4,379,750, Cl. 210-232.000.
Tilly, Michele M.: *See*—
Fruitstone, Mitchell J.; Tilly, Michele M.; and Pixton, Betty G., 4,379,847, Cl. 436-8.000.
Timex Corporation: *See*—
Capolupo, David F.; and Donnelly, James J., 4,379,644, Cl. 368-314.000.
Halicho, James J., 4,379,643, Cl. 368-309.000.
Titcomb, Steven E., to Creative Motion Industries, Inc. Operator powered vehicle. 4,379,566, Cl. 280-251.000.
Tjunkin, Boris A.: *See*—
Vakhnin, Gennady I.; Verty, Vladimir G.; Voronin, Pavel G.; Gurov, Evgeny I.; Isaikin, Vladimir G.; Mishakov, Vladimir N.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Tabakov, Vladimir P.; Tjunkin, Boris A.; and Fotieva, Ljudmila I., 4,379,592, Cl. 299-2.000.
Toda, Yuichi; Yano, Kohji; and Sakamoto, Katsuji, to Sumitomo Electric Industries, Ltd. Device for transmitting energy through electric wire or optical cable wound on drum. 4,379,615, Cl. 350-96.230.
Tokyo Kogaku Kikai Kabushiki Kaisha: *See*—
Uchiumi, Yoshihisa; and Tanabe, Akira, 4,379,625, Cl. 350-528.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Kitajima, Toshio, 4,379,975, Cl. 310-59.000.
Kumamaru, Kuniaki; Hiraki, Shunichi; and Yonezawa, Toshio, 4,379,726, Cl. 148-175.000.
Ooishi, Minoru; Mochizuki, Teruji; and Suzuki, Yutaka, 4,379,997, Cl. 330-298.000.
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Reed, Russell, Jr.; and Chan, May L., 4,379,903, Cl. 528-55.000.
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Adell, Robert, 4,379,376, Cl. 49-462.000.
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Gravener, Roy D.; De Carlo, Alfred F.; and Noiles, Douglas G., 4,379,457, Cl. 128-334.00R.

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Guile, Roy N., 4,379,679, Cl. 417-54.000.
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Boulos, Maher I., 4,379,777, Cl. 423-348.000.

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Stoev, Stoycho M.; Dshendova, Shtelyana D.; Stoyanov, Kiril N.; Dochev, Raycho V.; and Krestev, Tzvetan P., 4,379,714, Cl. 65-19.000.

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Downing, Gerald T.; and Savagian, Michael D., 4,379,805, Cl. 428-346.000.

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Field, George F.; Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,379,765, Cl. 260-245.600.

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Werle, Peter; Graf, Hans; and Walter, Erwin, 4,379,871, Cl. 523-331.000.

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Calvino, Ben J., 4,379,957, Cl. 200-145.000.
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Torres, Rafael; and Woodward, Oakley M., 4,380,011, Cl. 343-702.000.
Woody, Albert L.: *See*—
Roussin, Michael A.; Jones, Steven D.; and Woody, Albert L., 4,379,595, Cl. 299-37.000.
Woolery, Dean O., II: *See*—
Frankel, Milton B.; Witucki, Edward F.; and Woolery, Dean O., II, 4,379,894, Cl. 525-403.000.
Wright, Danny P.: *See*—
Kendall, Debra L.; Watson, James M.; and Wright, Danny P., 4,379,736, Cl. 203-9.000.
Wrulich, Herwig: *See*—
Zitz, Alfred; Schetina, Otto; Wrulich, Herwig; and Kissich, Arnulf, 4,379,594, Cl. 299-10.000.
Wu, D. Louise; and Swain, James W., to Philip Morris Incorporated. Cooked flavors for smoking products. 4,379,464, Cl. 131-275.000.
Wurzburg, Otto B.: *See*—
Tessler, Martin M.; Wurzburg, Otto B.; and Dirscherl, Teresa A., 4,379,919, Cl. 536-108.000.
Xerox Corporation: *See*—
Ort, Donald L., 4,380,017, Cl. 346-140.00R.
Wang, Shing C.; and Hamerdinger, Randolph W., 4,380,078, Cl. 372-62.000.
Yaegashi, Takashi: *See*—
Fujii, Setsuro; Sugimito, Mamoru; and Yaegashi, Takashi, 4,379,764, Cl. 260-112.50R.
Yakabe, Tooru: *See*—
Takanashi, Yukio; Yakabe, Tooru; and Asano, Shunji, 4,379,980, Cl. 313-446.000.
Yamabe, Masaaki; Munekata, Seiji; Kumai, Seisaku; and Kaneko, Isamu, to Asahi Glass Company, Ltd. Process for producing perfluorosuccinyl fluoride. 4,379,768, Cl. 260-544.00F.
Yamada, Hisashi; and Sugawara, Tsutomu, to Tokyo Shibaura Denki Kabushiki Kaisha. Gain controlled amplifier. 4,379,995, Cl. 330-254.000.
Yamada, Mikio; and Tabata, Yujin, to Nihon Surfactant Industry Co., Ltd. Gelatinizing agent composition, and gel and aqueous emulsion prepared therefrom. 4,379,755, Cl. 252-312.000.
Yamaguchi, Hiroaki: *See*—
Hattori, Tadashi; Yamaguchi, Hiroaki; and Ootsuka, Yoshinori, 4,379,403, Cl. 73-35.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Takada, Yukimitsu; Harada, Hiroshi; and Takubo, Shuji, 4,379,702, Cl. 440-77.000.
Yamamoto, Koichi: *See*—
Suzuki, Hiroo; Yamamoto, Koichi; Ohno, Yasuhide; and Miyamura, Kou, 4,379,482, Cl. 164-485.000.
Yamaoka, Masayoshi: *See*—
Numata, Mitsuo; Mimamida, Isao; Yamaoka, Masayoshi; Shiraishi, Mitsura; and Miyawaki, Toshio, 4,379,924, Cl. 544-27.000.
Yamashita, Tadaoki: *See*—
Ikedo, Masaru; Watari, Masafumi; Yasuno, Yoshitake; and Yamashita, Tadaoki, 4,379,621, Cl. 350-392.000.
Yamazaki, Hisayuki: *See*—
Chiyoda, Hironobu; Yamazaki, Hisayuki; and Takabe, Reiichiro, 4,379,762, Cl. 252-507.000.
Yamazaki, Tetu: *See*—
Hagiwara, Yutaka; Takada, Toshiaki; and Yamazaki, Tetu, 4,379,501, Cl. 188-218.0XL.
Yan, Tsoung Y., to Mobil Oil Corporation. Demetalation of heavy hydrocarbon oils. 4,379,747, Cl. 208-251.00H.
Yang, Chi C.; Madan, Arun; Ovshinsky, Stanford R.; and Adler, David, to Energy Conversion Devices, Inc. Current enhanced photovoltaic device. 4,379,943, Cl. 136-249.000.
Yano, Kohji: *See*—
Toda, Yuichi; Yano, Kohji; and Sakamoto, Katsuji, 4,379,615, Cl. 350-96.230.
Yano, Kohzo: *See*—
Kuwagaki, Hiroshi; Yano, Kohzo; and Takechi, Sadatoshi, 4,379,619, Cl. 350-357.000.
Yasuno, Yoshitake: *See*—
Ikedo, Masaru; Watari, Masafumi; Yasuno, Yoshitake; and Yamashita, Tadaoki, 4,379,621, Cl. 350-392.000.
Yeaw, David C., to Eastman Kodak Company. Method of analyzing an aqueous liquid for hexacyanoferrates. 4,379,848, Cl. 436-84.000.
Yee, James S.: *See*—
Bevan, David; Yee, James S.; and Pruyn, Richard R., 4,380,012, Cl. 343-705.000.
Yoder, Max N., to United States of America, Navy. Monolithic fully integrated class B push-pull microwave GaAs MESFET with differential inputs and outputs with reduced Miller effect. 4,380,022, Cl. 357-22.000.
Yokoyama, Tadashi: *See*—
Iwata, Masayosi; Douke, Harumi; Hayashi, Yoshikazu; Yokoyama, Tadashi; and Mizuta, Yukio, 4,379,954, Cl. 200-4.000.
Yoneda, Hiroichi: *See*—
Andoh, Sadanari; Maeda, Junji; Fukushima, Kiyoshi; Yoneda, Hiroichi; and Jinushi, Naotomo, 4,380,018, Cl. 346-140.00R.
Yonezawa, Toshio: *See*—
Kumamaru, Kuniaki; Hiraki, Shunichi; and Yonezawa, Toshio, 4,379,726, Cl. 148-175.000.
Yoritomi, Kenzaburo; Kezuka, Teruo; and Moriya, Mitsumasa, to Sanmatsu Kogyo Co., Ltd. Method for the chromatographic separation of soluble components in feed solution. 4,379,751, Cl. 210-659.000.
Yoshida, Hajime, to Hajime Industries Ltd. Inspection device. 4,379,636, Cl. 356-407.000.
Yoshimoto, Hisanari; Tonomura, Taka; and Takamura, Takuo, to Kabushiki Kaisha Fujikoshi. Chuck for machine tools. 4,379,667, Cl. 409-234.000.
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, to Asahi-Dow Limited. Composition for drawn film, cold drawn film made of said composition and process for manufacture of said film. 4,379,888, Cl. 525-211.000.
Yoshizuka Seiki Co., Ltd.: *See*—
Katagiri, Takeshi; and Tsuchifuji, Takakazu, 4,379,684, Cl. 425-78.000.
Younes, Usama E., to Atlantic Richfield Company. Fire retardant thermoplastic molding compositions. 4,379,877, Cl. 524-123.000.
Young, Cynthia L.: *See*—
Staub, Herbert W.; Schanbacher, Larry M.; Zencheck, Jack D.; and Young, Cynthia L., 4,379,782, Cl. 424-180.000.
Young, Donald L. Positive lock hose clamp. 4,379,359, Cl. 24-273.000.
Young, Hartley F.; Verhoef, Hendrikus M., deceased (by Verhoef, Edmund M., executor); and Remes, Wally A., to Ralph McKay Limited. Spring rail fastening system. 4,379,521, Cl. 238-349.000.
Young, Murray M., to University of Waterloo. Bioconversion of industrial cellulosic pulp materials to protein enriched product. 4,379,844, Cl. 435-251.000.
Yuan, Lloyd T.; Chang, Yu-Wen; and Mills, Thomas G., to TRW Inc. Active high frequency semiconductor device with integral waveguide. 4,380,020, Cl. 357-3.000.
Yuda, Takuo: *See*—
Tanaka, Shinken; and Yuda, Takuo, 4,379,648, Cl. 403-24.000.
Zecher, David C., to Hercules Incorporated. Chemically-initiated inverse emulsion polymerization with Na, Li/Cl, Br salt. 4,379,883, Cl. 524-801.000.
Zencheck, Jack D.: *See*—
Staub, Herbert W.; Schanbacher, Larry M.; Zencheck, Jack D.; and Young, Cynthia L., 4,379,782, Cl. 424-180.000.
Zenith Radio Corporation: *See*—
Hockenbrock, Richard L., 4,379,978, Cl. 313-318.000.
Zetterquist, Staffan G.: *See*—
Nilsson, Erling S.; and Zetterquist, Staffan G., 4,379,461, Cl. 128-736.000.
Ziegel, Douglas H., to RCA Corporation. Method and apparatus for sorting stones. 4,379,510, Cl. 209-643.000.
Zitz, Alfred; Schetina, Otto; Wrulich, Herwig; and Kissich, Arnulf, to Voest-Alpine Aktiengesellschaft. Process for sinking of shafts. 4,379,594, Cl. 299-10.000.
Zollner geb. Moller, Christine, to C. Conradty Nurnberg GmbH & Co. KG. Method of removing electrocatalytically active protective coatings from electrodes with metal cores, and the use of the method. 4,379,723, Cl. 134-2.000.
Zwillich, Alexander, to Westinghouse Electric Corp. Adjustable insulator attachment for isolated phase bus switch. 4,379,945, Cl. 174-99.00B.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF APRIL, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ahlgren, Nils H. Method of lowering and raising loads by means of a jack assembly and lifting element. Re. 31,206, Cl. 254-1.000.

Auburn Research Foundation: *See*—
Goodling, John S.; McDaniel, Gayner R.; and Steadham, Richard A., Re. 31,202, Cl. 128-303.140.

Canon Kabushiki Kaisha: *See*—
Tsunekawa, Tokuichi; and Taguchi, Tetsuya, Re. 31,207, Cl. 250-214.00R.

Cleamax Limited: *See*—
Jackson, John M., Re. 31,203, Cl. 134-48.000.

Donn Products Incorporated: *See*—
Sauer, Gale E., Re. 31,201, Cl. 52-667.000.

Goodling, John S.; McDaniel, Gayner R.; and Steadham, Richard A., to Auburn Research Foundation. Poultry beak remover. Re. 31,202, Cl. 128-303.140.

Jackson, John M., to Cleamax Limited. Apparatus for cleaning inside and outside surfaces of containers. Re. 31,203, Cl. 134-48.000.

Jalbert, Domina C. Aerial sled. Re. 31,205, Cl. 244-145.000.

McDaniel, Gayner R.: *See*—
Goodling, John S.; McDaniel, Gayner R.; and Steadham, Richard A., Re. 31,202, Cl. 128-303.140.

Sanner, George E. Sprinkler flow control systems. Re. 31,204, Cl. 137-78.300.

Sauer, Gale E., to Donn Products Incorporated. Locking connection for supporting grid systems. Re. 31,201, Cl. 52-667.000.

Steadham, Richard A.: *See*—
Goodling, John S.; McDaniel, Gayner R.; and Steadham, Richard A., Re. 31,202, Cl. 128-303.140.

Taguchi, Tetsuya: *See*—
Tsunekawa, Tokuichi; and Taguchi, Tetsuya, Re. 31,207, Cl. 250-214.00R.

Tsunekawa, Tokuichi; and Taguchi, Tetsuya, to Canon Kabushiki Kaisha. Leak current suppressing printed circuit board. Re. 31,207, Cl. 250-214.00R.

Unimation, Inc.: *See*—
Watanabe, Takehiko, Re. 31,208, Cl. 318-568.000.

Watanabe, Takehiko, to Unimation, Inc. Signal modification device for memory controlled manipulator apparatus. Re. 31,208, Cl. 318-568.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Reinhold, Donald F.; and Sletzinger, Meyer, to Merck & Co., Inc. Treatment of hypertension with L-alpha-methyl-3,4-dihydroxyphenylalanine. B1 3,344,023, Cl. 424—319.

Merck & Co., Inc.: *See*—
Reinhold, Donald F.; and Sletzinger, Meyer. B1 3,344,023, Cl. 424—319.

Dauser, Jr., William C., to Lloyd A. Heneveld, trustee. Wire connector. B1 4,295,004, Cl. 174/87.

Lloyd, A. Heneveld, trustee: *See*—
Dauser, Jr., William C. B1 4,295,004, Cl. 174—87.

Kato, Tetuo, to Tokico Ltd. Hydraulic damper. B1 4,189,034, Cl. 188—318.

Tokico Ltd.: *See*—
Kato, Tetuo. B1 4,189,034, Cl. 188—318.

LIST OF DESIGN PATENTEES

Abe, Noboru: *See*—
Seiffert, Florian; and Abe, Noboru, 268,617, Cl. D28-51.000.

Allibert S.A.: *See*—
Cornou, Jean, 268,559, Cl. D7-77.000.

Amba Marketing Systems, Inc.: *See*—
Schimmel, Otto K., 268,548, Cl. D3-48.000.

Anderson, William C.: *See*—
Wolters, Richard H.; Anderson, William C.; Tyke, Charles R.; and Schreiner, Charles P., 268,622, Cl. D34-40.000.

Apple Computer, Inc.: *See*—
Jobs, Steven P.; Manock, Jerrold C.; Hovey, Dean A.; and Kelley, David M., 268,584, Cl. D14-106.000.

Applied Industrial Company Limited: *See*—
Lee, Lap, 268,600, Cl. D21-13.000.
Lee, Lap, 268,601, Cl. D21-13.000.
Lee, Lap, 268,602, Cl. D21-13.000.
Lee, Lap, 268,603, Cl. D21-13.000.

Babock & Wilcox Company, The: *See*—
Whaley, George S.; and Willmott, Thomas L., 268,583, Cl. D14-103.000.

Baum, Rolf, to Mathis System-Technik GmbH. Mortar mixer. 268,586, 4-12-83, Cl. D15-19.000.

Beacham, Robert C., to Clorox Company, The. Container for air freshener. 268,613, 4-12-83, Cl. D23-150.000.

Beers, Eugene W., to Esselte Pendaflex Corp. Labeling machine. 268,595, 4-12-83, Cl. D18-19.000.

Beers, Eugene W., to Esselte Pendaflex Corp. Labeling machine. 268,596, 4-12-83, Cl. D18-19.000.

Beier, Hanns W. Key hanger. 268,553, 4-12-83, Cl. D6-113.000.

Berol Corporation: *See*—
Spence, David, 268,597, Cl. D19-39.000.

Biggs, Anthony J. Combined dental pin and chuck. 268,615, 4-12-83, Cl. D24-10.000.

Blasbalg, Morton L. Bird feeder. 268,619, 4-12-83, Cl. D30-15.000.

Braun Aktiengesellschaft: *See*—
Ullmann, Roland, 268,616, Cl. D28-49.000.

Bretschneider, Walter. Shoe base. 268,543, 4-12-83, Cl. D2-320.000.

Bright, John E. Vegetable cutter. 268,562, 4-12-83, Cl. D7-381.000.

Campion, Stanley F., executor: *See*—
Jensen, George B., deceased; and Campion, Stanley F., executor, 268,557, Cl. D7-20.000.

Canon Kabushiki Kaisha: *See*—
Kikuchi, Nobuo, 268,581, Cl. D14-94.000.
Kikuchi, Nobuo, 268,582, Cl. D14-94.000.

Chase, Richard A.; Grubb, Lawrence B.; and Williams, David M., to Johnson & Johnson Baby Products Company. Spinning toy. 268,604, 4-12-83, Cl. D21-92.000.

Chyba, Ronald L. Light dispersing prism attachable to a window, or similar article. 268,594, 4-12-83, Cl. D16-137.000.

Clorox Company, The: *See—*
Beacham, Robert C., 268,613, Cl. D23-150.000.
Coggin, J. Thayer, to Thayer Coggin Incorporated. Swivel chair. 268,550, 4-12-83, Cl. D6-26.000.
Compagnie Generale des Etablissements Michelin: *See—*
Grenie, Philippe, 268,573, Cl. D12-147.000.
Converse Inc.: *See—*
Crowley, Kevin J., 268,544, Cl. D2-320.000.
Cornou, Jean, to Allibert S.A. Insulated container. 268,559, 4-12-83, Cl. D7-77.000.
Cox, Michael F. Paperweight. 268,599, 4-12-83, Cl. D19-96.000.
Crowley, Kevin J., to Converse Inc. Outsole for sports shoe. 268,544, 4-12-83, Cl. D2-320.000.
Cubbison, Flossie E.: *See—*
Cubbison, Wilbert H.; and Cubbison, Flossie E., 268,588, Cl. D15-147.000.
Cubbison, Wilbert H.; and Cubbison, Flossie E. Portable ore separating bowl. 268,588, 4-12-83, Cl. D15-147.000.
Daenen, Robert H. C. M.; and De Coster, Pieter K. J., to Dart Industries, Inc. Bread storage container or the like. 268,560, 4-12-83, Cl. D7-82.000.
Dart Industries, Inc.: *See—*
Daenen, Robert H. C. M.; and De Coster, Pieter K. J., 268,560, Cl. D7-82.000.
De Coster, Pieter K. J.: *See—*
Daenen, Robert H. C. M.; and De Coster, Pieter K. J., 268,560, Cl. D7-82.000.
Dercks, Gerald A.; and Dercks, Michael J. Cremain vault. 268,623, 4-12-83, Cl. D99-5.000.
Dercks, Michael J.: *See—*
Dercks, Gerald A.; and Dercks, Michael J., 268,623, Cl. D99-5.000.
Drakulic, John. Water pump housing. 268,585, 4-12-83, Cl. D15-5.000.
Edery, Jean-Pierre. Bicycle cover. 268,546, 4-12-83, Cl. D3-36.000.
Esselte Pendaflex Corp.: *See—*
Beers, Eugene W., 268,595, Cl. D18-19.000.
Beers, Eugene W., 268,596, Cl. D18-19.000.
Frieberg, Bengt O. Reversible lock washer. 268,566, 4-12-83, Cl. D8-399.000.
Friedrich Grohe Armaturenfabrik GmbH & Co.: *See—*
Klose, Odo, 268,611, Cl. D23-35.000.
Fukuchi, Fumio: *See—*
Kono, Michinaga; Matsumoto, Yoshio; Katsumi, Hirosuke; and Fukuchi, Fumio, 268,587, Cl. D15-122.000.
Gagner, Lawrence J. Adjustable and foldable wooden log rack or the like. 268,563, 4-12-83, Cl. D23-138.500.
General Mills, Inc.: *See—*
Wildgen, Leo F., 268,556, Cl. D6-188.000.
Gibbons, Margaret K. Stuffed bear with simulated prosthetic limb. 268,606, 4-12-83, Cl. D21-159.000.
Gillberg, Carl. Paddling catamaran. 268,577, 4-12-83, Cl. D12-304.000.
Globol-Werk GmbH: *See—*
von Philipp, Fritz; and Schimanski, Georg, 268,614, Cl. D23-150.000.
Grenie, Philippe, to Compagnie Generale des Etablissements Michelin. Tire. 268,573, 4-12-83, Cl. D12-147.000.
Grubb, Lawrence B.: *See—*
Chase, Richard A.; Grubb, Lawrence B.; and Williams, David M., 268,604, Cl. D21-92.000.
Hamann, Michael L., to J. R. Simplot Company. Potato product. 268,539, 4-12-83, Cl. D1-1.000.
Hampton, Auborn R. Combined ball hitch and vehicle carrier for golf club carts having vertical mounting coupling. 268,574, 4-12-83, Cl. D12-157.000.
Harper, C. Cameron. Hood for instrument flight training. 268,593, 4-12-83, Cl. D16-123.000.
Heatwole, Wayne C. Jewelry pendant or the like. 268,569, 4-12-83, Cl. D11-81.000.
Hitachi, Ltd.: *See—*
Kono, Michinaga; Matsumoto, Yoshio; Katsumi, Hirosuke; and Fukuchi, Fumio, 268,587, Cl. D15-122.000.
Holden, Morell J., to Mobil Oil Corporation. Meat packaging tray or the like. 268,568, 4-12-83, Cl. D9-425.000.
Hovey, Dean A.: *See—*
Jobs, Steven P.; Manock, Jerrold C.; Hovey, Dean A.; and Kelley, David M., 268,584, Cl. D14-106.000.
Husky Corporation: *See—*
Sutcliffe, Grenville G., 268,612, Cl. D23-43.000.
J. R. Simplot Company: *See—*
Hamann, Michael L., 268,539, Cl. D1-1.000.
Jensen, George B., deceased; and by Campion, Stanley F., executor, to Syracuse China Corporation. Casserole dish or similar article. 268,557, 4-12-83, Cl. D7-20.000.
Jobs, Steven P.; Manock, Jerrold C.; Hovey, Dean A.; and Kelley, David M., to Apple Computer, Inc. Personal computer. 268,584, 4-12-83, Cl. D14-106.000.
Joffe, Richard M.: *See—*
Miller, Paul D.; and Joffe, Richard M., 268,591, Cl. D16-17.000.
Miller, Paul D.; and Joffe, Richard M., 268,592, Cl. D16-18.000.
Johnson, David J. Auxiliary sides for utility trailer. 268,572, 4-12-83, Cl. D12-106.000.
Johnson & Johnson Baby Products Company: *See—*
Chase, Richard A.; Grubb, Lawrence B.; and Williams, David M., 268,604, Cl. D21-92.000.
Johnson, Vicki L. A. Swimming suit. 268,542, 4-12-83, Cl. D2-40.000.
Katsumi, Hirosuke: *See—*
Kono, Michinaga; Matsumoto, Yoshio; Katsumi, Hirosuke; and Fukuchi, Fumio, 268,587, Cl. D15-122.000.
Kelley, David M.: *See—*
Jobs, Steven P.; Manock, Jerrold C.; Hovey, Dean A.; and Kelley, David M., 268,584, Cl. D14-106.000.
Kikuchi, Nobuo, to Canon Kabushiki Kaisha. Facsimile transceiver or the like. 268,581, 4-12-83, Cl. D14-94.000.
Kikuchi, Nobuo, to Canon Kabushiki Kaisha. Facsimile transceiver or the like. 268,582, 4-12-83, Cl. D14-94.000.
Klose, Odo, to Friedrich Grohe Armaturenfabrik GmbH & Co. Hand shower. 268,611, 4-12-83, Cl. D23-35.000.
Kojima, Fumiyo: *See—*
Matsumoto, Nobuki; Yoshihama, Manzo; and Kojima, Fumiyo, 268,580, Cl. D14-94.000.
Kojima, Masao, to Shimano Industrial Company Limited. Bottle. 268,567, 4-12-83, Cl. D9-372.000.
Kono, Michinaga; Matsumoto, Yoshio; Katsumi, Hirosuke; and Fukuchi, Fumio, to Hitachi, Ltd. Industrial robot. 268,587, 4-12-83, Cl. D15-122.000.
Kyotaru Co., Ltd.: *See—*
Uno, Koki, 268,540, Cl. D1-2.000.
Uno, Koki, 268,541, Cl. D1-2.000.
Lee, Lap, to Applied Industrial Company Limited. Electronic memory game housing. 268,600, 4-12-83, Cl. D21-13.000.
Lee, Lap, to Applied Industrial Company Limited. Electronic memory game housing. 268,601, 4-12-83, Cl. D21-13.000.
Lee, Lap, to Applied Industrial Company Limited. Electronic memory game housing. 268,602, 4-12-83, Cl. D21-13.000.
Lee, Lap, to Applied Industrial Company Limited. Electronic memory game housing. 268,603, 4-12-83, Cl. D21-13.000.
Liu, Hsiung-Cheng. Combined table and rockable chair unit. 268,549, 4-12-83, Cl. D6-6.000.
Mack, Sandra L. Combined wall switch and escutcheon therefor. 268,564, 4-12-83, Cl. D8-353.000.
Malik, Richard J. Aquarium filter. 268,607, 4-12-83, Cl. D23-4.000.
Manock, Jerrold C.: *See—*
Jobs, Steven P.; Manock, Jerrold C.; Hovey, Dean A.; and Kelley, David M., 268,584, Cl. D14-106.000.
Marini, Louis G.; and Marini, Thomas O. Cart for holding refuse bag. 268,621, 4-12-83, Cl. D34-26.000.
Marini, Thomas O.: *See—*
Marini, Louis G.; and Marini, Thomas O., 268,621, Cl. D34-26.000.
Marshall, Eric J. Telephone. 268,579, 4-12-83, Cl. D14-53.000.
Mathis System-Technik GmbH: *See—*
Baum, Rolf, 268,586, Cl. D15-19.000.
Matsumoto, Nobuki; Yoshihama, Manzo; and Kojima, Fumiyo, to Ricoh Company, Ltd. Facsimile recorder and transceiver. 268,580, 4-12-83, Cl. D14-94.000.
Matsumoto, Yoshio: *See—*
Kono, Michinaga; Matsumoto, Yoshio; Katsumi, Hirosuke; and Fukuchi, Fumio, 268,587, Cl. D15-122.000.
Matsushita Electric Works, Ltd.: *See—*
Seiffert, Florian; and Abe, Noboru, 268,617, Cl. D28-51.000.
Miller, Paul D.; and Thaler, Martin, to View-Master International Group. Slide viewer. 268,589, 4-12-83, Cl. D16-17.000.
Miller, Paul D.; and Thaler, Martin, to View-Master International Group. Tabletop slide viewer. 268,590, 4-12-83, Cl. D16-17.000.
Miller, Paul D.; and Joffe, Richard M., to View-Master International Group. Transparency viewer. 268,591, 4-12-83, Cl. D16-17.000.
Miller, Paul D.; and Joffe, Richard M., to View-Master International Group. Folding transparency viewer. 268,592, 4-12-83, Cl. D16-18.000.
Mizuno, Makoto: *See—*
Mizutani, Takeshi; and Mizuno, Makoto, 268,598, Cl. D19-43.000.
Mizutani, Takeshi; and Mizuno, Makoto, to Shachihata Industrial Co., Ltd. Felt pen. 268,598, 4-12-83, Cl. D19-43.000.
Mobil Oil Corporation: *See—*
Holden, Morell J., 268,568, Cl. D9-425.000.
Mortus, Harold J., to Russell, Burdsall & Ward Corporation. Lug nut. 268,565, 4-12-83, Cl. D8-397.000.
Napolitane, Andrew. Compact. 268,618, 4-12-83, Cl. D28-78.000.
Ohya, Toshio, to Sony Corporation. Adapter for converting recorded video signals from one to another size cassette. 268,578, 4-12-83, Cl. D14-2.000.
Pace Collection, Inc., The: *See—*
Rosen, Leon, 268,555, Cl. D6-146.000.
Parker-Hannifin Corporation: *See—*
Sharp, Bernard C., 268,575, Cl. D12-187.000.
Sharp, Bernard C., 268,576, Cl. D12-187.000.
Pendelfin Studios Limited: *See—*
Roberts, Doreen N., 268,571, Cl. D11-158.000.
Raftery, William B.; and Whitwam, Ronald L., to Steelcase Inc. Combined table and seating unit. 268,551, 4-12-83, Cl. D6-46.000.
Raftery, William B.; and Whitwam, Ronald L., to Steelcase Inc. Combined table and seating unit. 268,552, 4-12-83, Cl. D6-46.000.
Randolph, Ralph A. Pull toy. 268,605, 4-12-83, Cl. D21-165.000.
Ricoh Company, Ltd.: *See—*
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Risser, Bryce N. Barbecue cooking tool. 268,561, 4-12-83, Cl. D7-102.000.
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Raftery, William B.; and Whitwam, Ronald L., 268,551, Cl. D6-46.000.
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Tyke, Charles R.: *See*—
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Uno, Koki, to Kyotaru Co., Ltd. Sushi. 268,541, 4-12-83, Cl. D1-2.000.
UPL Group Limited: *See*—
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Handelskwekerij, B. V.: *See*—
van Staaveren, Maurits C., 5,030, Cl. 71.000.
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CLASSIFICATION OF PATENTS

ISSUED APRIL 12, 1983

NOTE.—First number, class; second number, subclass; third number, patent number

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D1—	1	268,539		127	268,554	D11—	81	268,569		103	268,583	D19—	39	268,597			268,611
	2	268,540		146	268,555		132	268,570		106	268,584		43	268,598		43	268,612
		268,541		188	268,556		158	268,571	D15—	5	268,585		96	268,599		138.5	268,563
D2—	40	268,542	D7—	20	268,557	D12—	106	268,572		19	268,586	D21—	13	268,600		150	268,613
	320	268,543		71	268,558		147	268,573		122	268,587			268,601			268,614
		268,544		77	268,559		157	268,574		147	268,588			268,602	D24—	10	268,615
D3—	33	268,545		82	268,560		187	268,575	D16—	17	268,589			268,603	D28—	49	268,616
	36	268,546		102	268,561			268,576			268,590		92	268,604		51	268,617
	38	268,547		381	268,562		304	268,577			268,591		159	268,606		78	268,618
	48	268,548	D8—	353	268,564	D14—	2	268,578		18	268,592		165	268,605	D30—	15	268,619
D6—	6	268,549		397	268,565		53	268,579		123	268,593	D23—	4	268,607	D34—	21	268,620
	26	268,550		399	268,566		94	268,580		137	268,594		23	268,608		26	268,621
	46	268,551	D9—	372	268,567			268,581	D18—	19	268,595		35	268,609		40	268,622
		268,552		425	268,568			268,582			268,596			268,610	D99—	5	268,623
	113	268,553															

CLASSIFICATION OF PLANTS

P.—	2	5,036			5,039		9	5,032		10	5,038						
	7	5,031		8	5,035			5,033		20	5,037		54	5,034		71	5,030

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